June 16, 2005

MEMORANDUM **UTAH DEPARTMENT OF TRANSPORTATION**

TO: Jim McMinimee, P.E., Chairman

FROM: Barry Axelrod
Recorder, Standards Committee

SUBJECT: Standards Committee Meeting Minutes and Next Meeting

The next meeting has been scheduled for Thursday, June 30, 2005 at 8:00 a.m., in the main 1st floor conference room of the Rampton Complex.

Item		**Remarks**	**Sponsor**
1.	Minutes of April 28, 2005	For approval	Barry Axelrod
2.	Environmental Supplement Specifications and Standard Drawings, See Listing	For approval	Terry Johnson
3.	Standard Drawings, GW 5A, 5B, and 5C, Pedestrian Access	For approval	Larry Montoya
4.	Supplemental Specification 02745, Asphalt Material	For approval	Cameron Petersen
5.	Supplemental Specification 00725M, Scope of Work	For approval	Jeff Saddler
6.	Median Barrier Selection Process	For discussion	Tim Biel
7.	New Products Procedure Update	For discussion	Michelle Page
8.	Supplemental Specification 00555M, Prosecution and Progress, Limits of Operation	For approval	John Leonard
9.	ATMS Supplemental Specifications, See Listing	For approval	Robert Strong
10.	Supplemental Specifications 03412M, Prestressed Concrete and 05120M, Structural Steel	For approval	Ray Cook
11.	Review of Assignment/Action Log	For review	Jim McMinimee
12.	Meeting Improvements (on-going agenda item)	For discussion	Jim McMinimee
13.	Other Business		

JCM/ba
Attachments

cc:

Cory Pope Director, Region One	Stan Burns Engineering Services	Richard Miller Standards
Randy Park Director, Region Two	Todd Jensen Structures	Barry Axelrod Standards
Tracy Conti Director, Region Three	Darrell Giannonatti Construction	Patti Charles Standards
Dal Hawks Director, Region Four	Tim Biel Materials	Shana Lindsey Research
	Richard Clarke Maintenance	Carlos Machado and Todd Emery FHWA
	Robert Hull Traffic and Safety	Mont Wilson AGC
		Tyler Yorgason ACEC

Agenda Listing

Item 2:

01571	Temporary Environmental Controls
01574M	Environmental Control Supervisor
EN 1	Temporary Erosion Control (Check Dams)
EN 2	Temporary Erosion Control (Silt Fence)
EN 3	Temporary Erosion Control (Slope Drain And Temporary Berm)
EN 4	Temporary Erosion Control (Drop Inlet Barriers)
EN 5	Temporary Erosion Control (Pipe Inlet And Curb Inlet Barriers) (New title)
EN 6	Temporary Erosion Control (Sediment Trap And Stabilized Construction Entrance) (New drawing)
EN 7	Temporary Erosion Control (Straw Bale Barrier) (New drawing)

Item 9:

13551M	General ATMS Requirements
13552M	Ramp Meter Signals and Signing
13553M	ATMS Conduit
13554M	Polymer Concrete Junction Box
13555M	ATMS Cabinet
13556M	Closed Circuit Television (CCTV) Assembly
13557M	Variable Message Sign
13561M	ATMS Power Service
13594M	Fiber Optic Communication

April 28, 2005

A regular meeting of the Standards Committee convened at 8:00 am, Thursday, April 28, 2005, in the 1st floor conference room of the Rampton Complex.

Members Present:

Jim McMinimee	Project Development	Chairman
Richard Miller	Standards and Specifications	Secretary
Barry Axelrod	Standards and Specifications	Recorder
Randy Park	Region 2	Member
Stan Burns	Engineering Services	Member
Todd Jensen	Structures	Member
Darrell Giannonatti	Construction	Member
Richard Clarke	Maintenance	Member
Tim Biel	Materials	Member
Mont Wilson	AGC	Advisory Member
Tyler Yorgason	ACEC	Advisory Member

Members Absent:

Robert Hull	Safety	Member
Carlos Machado	FHWA	Advisory Member
Todd Emery	FHWA	Advisory Member

Staff:

Barry Axelrod	Standards and Specifications
Patti Charles	Standards and Specifications
Karl Verhaeren	Region 4 Construction
Pete Negus	Construction
Sam Sherman	TOC
Brent Jensen	Environmental
Jesse Sweeten	Construction
Tam Southwick	Traffic and Safety

Visitors:
None

Standards Committee Meeting

Minutes of the April 28, 2005 meeting:

1. Minutes of February 24, 2005 meeting were approved as written.

   Motion: Darrell Giannonatti made a motion to accept the minutes as written. Seconded by Tim Biel. Passed unanimously.

2. Supplemental Specification 00555, Prosecution and Progress, Liquidated Damages Table (Agenda Item 2) - Presented by Pete Negus.

   Pete said they finally have all the information and have put it together. He said he took the information to FHWA but has not heard anything back.

   Discussion points were:

   - Richard commented that according to the submittal sheet neither the AGC nor ACEC have provided comments. Jim asked if the conclusion is that this item might not be ready for approval. Richard said the item was discussed at the last meeting and that he thought it was ready for approval.

   - In response to a comment from Jim, Pete said he adjusted some of the data based on the information they had but did not do a statistical analysis.

   - Todd asked about the value for the five million dollar line, commenting that the calendar day value went down while the working day value went up. He asked what might have caused that. Pete said it could be based on the number of projects being looked at for the range. Pete said only two projects fit the range so there wasn't a large sampling to use. In response to a comment from Mont, Pete said the data is based on actual cost so there isn't a percent correlation between calendar and working days.

   - Pete went on to explain the two-year CFR requirement. Pete said they try to be proactive. He added that in the past he has gone back through Washington to get guidance on the process. Darrell said that based on how we look at this it may not be worth the effort to change the table. Pete said we can decide to leave the table as is if it doesn't change that much. The CFR requirement is just for review.

   - Pete said the last time they did this there wasn't a lot of direction from the Feds.

   - In response to Darrell, Mont indicated to leave the table as is. Darrell agreed. Comments indicated there are three options, leave as is, use the data presented by Pete, or come up with another method.

- Darrell suggested keeping the table as is but maintain the information put together by Pete for future use. Pete asked if he should write a letter to FHWA indicating UDOT has reviewed the information and decided to leave it as is because the data hasn't changed significantly. Pete said he would draft the letter.

Motion: Darrell Giannonatti made a motion to keep the Liquidated Damages Table as listed in the currently approved Standard Specifications and not make any changes. Seconded by Todd Jensen. Passed unanimously.

Action Item: Pete Negus to write letter to FHWA indicating the information has been reviewed but that no change is being recommended.

3. Supplemental Specification 02827, Deer Ramp and Standard Drawings FG 4A, Deer Crossing Details and FG 4B, Deer Ramp Details (Agenda Item 3) – Presented by Richard Miller for Michelle Page.

Richard said this item was initially presented during the February meeting. He said Michelle made the changes recommended at that meeting. He said the Measurement and Payment information is presented in the submittal sheet. He said drawing FG 4A shows the High Migratory and Typical crossings. The plans would specify the type. Richard said the details are shown on FG 4B.

Richard said a Wildlife QIT has set the criteria on usage.

Discussion points were:

- Todd commented about the submittal sheet. He said the stakeholder part shows who were contacted, but no comments. He asked if we can assume there were no comments. Richard said some of those listed were on the QIT that helped put this together. Tyler said that his comments for the ACEC were addressed.

- Tyler commented about the wording in the Measurement and Payment (M and P), asking if the "for example" could be changed to list everything or rephrase the wording. Richard said the choice at the last meeting was to use "For example." He said that way all items would be covered in case one was omitted. Mont didn't think the M and P was clear from a Contractor standpoint. Karl said he agreed with Tyler and that M and P should clearly describe what is included.

- Todd suggested "for example" be changed to "including but not limited to." Karl said he was fine with that. Karl added that Michelle did a good job in capturing all the comments from the last meeting.

- Todd commented about the note on FG 4B with respect to the 2 x 6 timber. He said the drawing shows 2 x 8 typical. The decision was to remove the 2 x 6 reference from the note below the Deer Ramp Detail to agree with the supplemental specification.

Motion: Darrell Giannonatti made a motion to approve Supplemental Specification 02827 as presented and Standard Drawings FG 4A and FG 4B as discussed and modified. Seconded by Tim Biel. Passed unanimously.

4. Standard Drawings, AT 4, Typical Ramp Meter Signal Head Mounting and SL 12, Traffic Counting Loop Detector Details (Agenda Item 4) – Presented by Sam Sherman.

Sam said the drawings were initially presented at the February 24 meeting. He said AT 4 was not complete at that time so the direction was to finish it up. That is now done. He said the crews that maintain this item reviewed the drawing and actually constructed the item on a test bench. He said their consultant also reviewed the drawing. Sam indicated AT 4 is now ready for approval.

Sam said SL 12 was updated to meet current requirements dealing with loop spacing. He said note 1 dealing with contact information was removed.

Discussion points were:

- There was no significant discussion.

Motion: Darrell Giannonatti made a motion to approve Standard Drawings AT 4 and SL12 as presented. Seconded by Todd Jensen. Passed unanimously.

5. Standards Committee Policy, UDOT 08A5-1 (Agenda Item 5) - Presented by Barry Axelrod.

Barry highlighted each of the changes. In the first procedure the first change was just to bold the item. He said a two-week requirement was added for all stakeholders. Initially this requirement applied only to the AGC and ACEC coordination but comments received during their region visits indicated the regions would like the same amount of time. Region comments indicated that in some cases they don't even get a day to respond and therefore may not even comment on the proposed change. With this change no one feels rushed to comment, coming up short. The next change Barry highlighted was the five-day suspense to get changes to the Standards Section following approval. He said the time frame was bolded to show the importance of that time. Barry said that way they can review the approved items and get everything published within their timelines.

Referring to step 16 of the first procedure Barry said the fifteen working day requirement was changed to 10 working days to meet their performance measure. Referring back to the five-day requirement, Barry said that is important if they are to get everything out on time and not delay implementation. In response to two comments Barry said this is doable and doesn't cause them problems. He said they have been doing it this way for the last two meeting with no problem. Barry emphasized that the key is getting the updates to them following approval. Barry said he is asking for help from the Committee members in getting the updates to them following approval.

Barry covered the FHWA procedure next. He said this change was based on the recommended changes presented at the last meeting by Todd Emery from FHWA. The FHWA member would come to the meeting with comments, ready to give their approval of those particular items. Because no FHWA member was present Barry said he wondered how the procedure would work in that case.

Barry said the stakeholder procedure was updated to clarify actions and show the 14 day requirement.

On the submittal sheet in the policy Barry said the header was cleaned up. He said the two week requirement was included in the two areas. He said the Minimum Sampling and Testing item was added so it is looked at for each change. The Benefits section was added as discussed at the last meeting.

Barry said the last item was another big issue that came up during their region visits. He said in the past the Priority 3 date was two weeks, but with the way the Engineers Estimate has to be reviewed most if not all that time was lost during that review. The regions asked if the time could be extended. Initially the recommendation was for three weeks but further comment during subsequent region visits indicated four weeks would be better for them in meeting their requirements.

Discussion points were:

- Todd said he was uncomfortable approving the item without FHWA comment and approval. Darrell said FHWA were the ones who brought up the change on the approval process. Todd commented as to whether this was written the way they wanted. Barry then referred to the recent approval letter from FHWA that spelled out the process. Barry commented that these proposed changes were in the package that FHWA reviewed. Barry went on to read the paragraph in the letter.

- Richard and Barry explained that was how the coordination for the February meeting was done and that they received a letter from FHWA outlining their recommendations. Barry said from that standpoint he is comfortable. Barry went on to say for this meeting with FHWA not being present, if they had comments they would have gotten them to us. He thought everything could be approved but they still needed to ask and address any problem areas.

Post meeting follow up. In a phone conversation in response to an e-mail on May 3, 2005 between Todd Emery and Barry Axelrod, Barry indicated that Todd had the approval letter ready and that he didn't have any problems with the agenda items that would prevent their approval. Someone was to have been at the meeting in Todd's place but was not. During that phone conversation Todd indicated that Jim should sign the procedure letter agreeing to the new procedure with FHWA.

Motion: Darrell Giannonatti made a motion to approve the Standards Committee Policy, 08A5-1 as presented. Seconded by Tim Biel. Passed unanimously.

6. Standards Sheet 1B and 1C for Deletion (Agenda Item 6) – Presented by Barry Axelrod.

Barry thanked all the regions for their comments during the Standards Sections recent visits. He said they got some really good inputs with some resulting in items being brought to this Committee. Other items have already been implemented. This item was one suggested by the regions.

Barry said Region 3 initially brought up the item so they had time to discuss it at each of the remaining three region visits. All concurred that with the way projects are electronically put together the two sheets are not needed. Barry pointed out the information is redundant with information already included in other locations. Barry said several attachments were included in the agenda package to better see the current procedure and the recommended change.

Barry said several good comments came back from Tyler from the ACEC coordination. Barry said he addressed each comment in the submittal sheet.

Barry said all Standard Specifications and all Standard Drawings apply in all projects with the bid items determining requirements. Given this, why are the 1B and 1C sheets needed to check off applicable drawings if all actually applied?

Discussion points were:

- Todd said his concern dealt with project archives down the line. Todd asked Barry to explain if we could figure out what drawings went with a particular plan set. Jesse said they still include the Standard Drawings in the plan sets. Barry went on to explain how they archive drawings that are up for approval as changes so they have a record of what was in effect at any given time. They maintain that information as well as make it available on the Standards Web site. The approved drawings are then placed in the main set of files so future changes would pick up the most current drawing.

- Todd asked about the timing of the project. Barry pointed out the next item in the handout as being the table of contents that goes in each project with the project coversheet and applicable dates. Barry said in number “I” of the table of contents they included the wording for the drawings similar to the specifications as being applicable for that project. He went on to say the next page then lists all changed drawings by date. As each change is approved this item is updated to remain current. Barry said the next page in the package shows the full index of drawings with the current date, explaining that this is identical in information to sheets 1B and 1C. Barry said currently this listing is in both the Federal and State tables of contents for small 8 ½ x 11 plan sets. He said their recommendation is to remove it from those projects because identically formatted information is part of each drawing change they issue. That information is posted to the drawing book that by reference is included in every project. The archive files include this information so it can be determined what was in effect at any given time.

- Barry said that if this is approved but after six months or so we determine it isn't working it isn't hard to fall back to the current position. Barry said most of the comments they received dealt with going back and finding past information. Barry said the mechanism is there to do that.

- Jim said after reading the comments he had concerns from a Construction standpoint. He said he used the sheets to determine what they should be using. He asked if there is still something to be able to do that. Is there a way in Construction to be able to say this is the Standard Drawing or Standard Specification I should be using? Jim asked if we still have that. Barry said he wasn't sure they did but that it gets back to the same analogy with the specifications. We don't have a check sheet for the specifications. Wouldn't the same reasoning apply to the drawings? Whatever we do with the specifications, why don't we do the same with the drawings?

- Comments indicated sometimes the sheets 1B and 1C are being checked and sometimes they are not. Barry said it seems to be an exercise in where to put checkmarks but nothing happens from there.

- Randy said the checkmarks were used for quality control in the design process and again by the field people. Randy said the sheets could be looked at and the determination made immediately as what they should pay attention too.

- Todd asked Karl and Mont for their opinions. Mont said the estimators and contractor field people don't keep track of changes and they want a ready source to see what is in effect today. Barry said it is fine if the decision is to leave the sheets in projects. Karl said he has advocated getting rid of the sheets for a long time because in PS&Es he sees the time spent trying to determine which drawing applies and which doesn't when in fact all apply. Karl said he could see getting some grief from the construction folks for the same reason Mont was referring too. It is nice to have a full size drawing instead of the 8 ½ x 11 sheets in the book. Karl said he doesn't see any huge detriment, adding that in his mind if it forces people on the project to look for the standard that applies to the project and print it out that might cause them to pay a little more attention to the details.

- Barry said one of the comments they got was what happens if you forget to put in one of the checked drawings. Barry said they could go either way and that they were bringing forward good comments from their region visits with the designers and project managers. He said there were no significant problems with taking the sheets out.

- Tyler said even with the drawings checked you still have more than one detail. He said it doesn't give you an indication of what needs to be built. He said it would make a lot more sense in plans to reference the drawings and details. That way it is clear on what needs to be built. Tyler said it is confusing for someone to make an assumption based on what standard drawing is checked or not checked.

- Darrell said he would like to have the sheets in projects with the checks for construction people to determine what applies.

- Richard said that we have heard from the Preconstruction and Project Management people that we don't need the sheets, but if construction needs them then the sheets should be there.

- Randy said the sheets need to be left in and used with the checkmarks. He said it is a good quality control for Preconstruction and Project Management. That way they know what is being put in a project.

- Jesse said all the 11 x 17 plans that are coming in have the sheets checked while the 8 ½ x 11 plan sets haven't been using the sheets. Barry said depending on the plan sheet size the information is in each project in more than one place in different formats. He said one of the reasons for the change was to remove the redundancy.

- Barry said what he is getting from the discussion is to stay as is and not make a change related to the two sheets. From a construction standpoint we need to stay as is.

- No further action or motion is needed to maintain the sheets in the current manner.

- Comments indicated the write up and discussion was good and that the information should be maintained for consideration in the future. Barry said everything is maintained as part of the minutes and meeting files. Barry said the comments and recommendations from the regions were looked at and a determination was made to not go in that direction.

7. Letter of Instruction for Use of Non-Standard 12.5 Foot Barrier (Agenda Item 7) – Presented by Richard Miller for Jason Davis.

Barry said he left Jason a phone message after talking to Jim Beadles on questions Jim McMinimee had. Barry said he had not received any response.

Richard said this item and letter has to do with the thousands of 12 ½ foot barrier we have stockpiled. He said maintenance would like to use the barrier. He said the letter details the usage on non-NHS systems where the speed limit is 45 mph or less.

Richard said he talked to Glenn Schulte who thought the approval should come from the Standards Committee not from Traffic and Safety as Jason had originally requested. Richard said Glenn had indicated other states have used the barrier and in some cases piled dirt behind the barrier. Richard pointed out the pin connection doesn't meet NCHRP 350 requirements that we adopted in 2000 - 2001.

Richard said he and Barry were given an assignment to see how we stood legally with this. Richard said Jim Beadles had a couple of questions. He wanted to know if other states were doing this. Glenn had indicated a couple of states were using the barrier, not on high volume, high speed roads. Richard said current barrier already in place can be kept as long as it isn't touched on a project. If the barrier is in place and that road is widened then the barrier has to be replaced with the 20-foot barrier.

Richard said Jason did his homework on this and it is appropriate to bring it to this Committee for approval.

Richard said the concerns are whether other states are using this type of barrier and what the inherent risks are.

Discussion points were:

- Todd said repairs can be made to the 12 ½ foot barrier using the same type.

- Darrell asked about the 1.2 reference with relation to the clear zone and if that came from the MUTCD or what. Richard said he thought it came from the Roadside Design Guide.

- Randy commented that if it is outside the clear zone then why care. Richard said most of the applications Jason wanted are inside the clear zone.

- Todd said that as he looks at the letter, note 5 is confusing. Karl agreed that note 5 is confusing. Karl said the beginning of the letter refers to non-NHS and note 5 refers to the NHS. Note 5 conflicts with the first paragraph of the letter. Why do we need note 5? Richard Clarke said the letter is to clarify usage for the Maintenance stations. Randy said you can put anything you want outside the clear zone.

- There were questions as to the action required by the Committee and if an approval was needed.

- Richard Miller said this brings up another issue. Who approves deviating from standards?

Motion: Randy Park made a motion to approve letter as discussed with the elimination of item 5. Seconded by Richard Clarke. Passed unanimously.

8. AASHTO vs UDOT Standards (Agenda Item 8) – Presented by Richard Miller.

Richard said this item came out of their discussions during the rewrite of the Manual of Instruction for Roadway Design. He said we are accepting AASHTO standards but in a few cases we are not.

For paved shoulder UDOT requires the shoulder be paved full width. AASHTO only requires half the width be paved. Richard said it related to Maintenance and snow removal more than anything else. Richard said we have no problem saying in UDOT we have these design standards that are above AASHTO. We just want to list what they are.

Discussion points were:

- Todd commented about how many project we have that used the shoulders to hold traffic while working in the area. This has a huge upside to it.

- Comment indicated that Region 4 does use the half and half standard in certain situations.

- Todd commented that the two extra feet in bridge width relates to the barrier offset referenced further down on the submittal sheet. He said it is to match the shy distance.

Moving on to vertical clearance Richard said UDOT requires 16 feet six inches while AASHTO only requires 16 feet.

For end sections on barrier Richard said UDOT requirement is 1.2 times the clear zone. Richard said this is something Traffic and Safety put in.

Richard said one item not listed on the submittal sheet is passing sight distance. He said he took an average 55 mph two-lane highway. AASHTO requires 1,985 feet passing sight distance while MUTCD requires 900 feet. He said there are a lot of questions on how you determine what your passing sight distance is and that a lot of it is based on engineering judgment. Richard said he suggests staying with AASHTO. He added that John Leonard commented that the MUTCD is accepted by the legislature as law. Richard asked if that comes into effect using the AASHTO standard over MUTCD. Richard said most UDOT designers use AASHTO but some Consultant designers use MUTCD.

Discussion points were:

- Tyler said he might have a misunderstanding saying that he thought the MUTCD dealt mainly with paint markings and not the actual sight distance. Richard said they have discussed this extensively during their manual rewrite meetings. Richard said Bob Jacobs from Stanley is a consultant on their committee doing this rewrite.

- Randy said Tyler had a good point, adding that either way we are safe.

- Richard said Bob Jacobs talked with someone at FHWA who said MUTCD are minimums. You can't always go by minimums; you have to use engineering judgment.

On turn lanes Richard said UDOT requires 11 foot turn lanes while AASHTO requires between 9 and 13 feet.

Discussion points were:

- Jim asked if Richard know who came up with the 11 foot distance for UDOT. Richard said it came from John Leonard in Traffic and Safety. Richard said John thought the 9 to 13 distance was too vague.

- Richard asked if there where comments either way adding that his preference would be to go with the AASHTO standard. He said this would allow designers to go greater if needed. Tyler said he couldn't think of a lot of times they would advocate using the 9 foot distance.

- Tyler commented about design exceptions and design waivers and the approach to some of those things. Richard said they are working on that as part of the manual rewrite.

- There was no further discussion or required action on the part of the Committee.

9. Standard Drawing SL 13, Video Detection Camera Mount (Agenda Item 9) – Presented by Tam Southwick.

Tam said this drawing was initiated by Region 3 to have a standard on the mounting position. She said during construction there is some confusion on the location of the camera. She said the location was based on a consensus of information from the regions. Tam said she hadn't heard from Region 1. The camera would be put in line with the left turn lane.

Discussion points were:

- Jim commented that it appeared there was a lot of interaction with a lot of people. The submittal sheet shows the coordination and comments.

- Todd commented about the brackets shown on the drawing and if they would be the correct size. He said no size is shown on the drawing. Tam thought it came standard with the camera.

Motion: Randy Park made a motion to approve Standard Drawing SL 13 as presented. Seconded by Darrell Giannonatti.

Discussion points were:

- Mont commented about the "See Note" reference in the Front View detail in the middle of the drawing. Tam said that should refer to Note 7 and may not have printed properly. She will fix it. She went on to explain the note and the double left turn need. Jim commented about putting a "minimum" in front of the one foot dimension.

- Todd asked about the detail reference in note 7. He said he could see a detail "a" but not a detail "b." The reference in the note has the "a" and "b" inside a circle that refers to the addition detail notes on the left bottom of the drawing. Karl suggested changing the wording of the note to avoid confusion.

Motion: Randy Park modified his motion to approve Standard Drawing SL 13 as discussed and modified. Seconded by Darrell Giannonatti. There was no further discussion. Passed unanimously.

10. Review of Assignment/Action Log (Agenda Item 10)

Jim reviewed the action log.

Comments beyond those identified in the agenda package, Action Item Update follow:

- Item 1, Rumble Strips. Jim asked if something is to be brought to the June meeting. Barry indicated that was what he understood from John.

- Item 2, Painted Cattle Guard. The same information for item 1 applies for this item.

- Item 3, New Drawing of Four-Legged Intersection. Jim said John also has this item.

- Item 4, Deer Ramps approved. Item closed.

- Item 5, Traffic Barriers. Jim asked Tim for an update. Tim said he has a lot of information that need to be put together.

- Item 6, New Products Procedure. Richard said the QIT is meeting and plans on wrapping things up in the near future.

- Item 7, Section 00555 for Liquidated Damages was discussed during the meeting. Item to revert back to the currently approved version. Item Closed.

- Item 8, Standards Committee Policy, UDOT 08A5-1 approved. Item closed.

- Item 9, Standard Drawing AT 4 approved. Item closed.

- Item 10, Standard Drawing SL 12 approved. Item closed.

- Item 11, Open Range Cattle. Jim asked if this was another Traffic and Safety item. Barry said it is, under Robert Hull.

- The status report as handed out at the meeting follows:

Action Item Update for April 28, 2005 Standards Committee Meeting
(As of April 11, 2005)

Item 1, Rumble Strips: According to John Leonard the BYU study is still pending. He recommends the target date be changed to June 2005.

Item 2, Painted Cattle Guard: According to John Leonard this is on hold pending further study and review. He recommends the target date be changed to June 2005.

Item 3, New Drawing of Four-Legged Intersection: According to John Leonard this item is not ready as a result of work on the Interstate signing project. He recommends the target date be changed to June 2005.

Item 4, Deer Ramps: Being covered on the agenda with follow up from previous meeting. Item up for approval.

Item 5, Traffic Barriers: Tim Biel indicated the item is still being worked on. Agenda item 7, Use of Non-Standard 12.5 Foot Barrier, for the April meeting does not cover the full extent of Tim's item. Tim recommends the target date be changed to June 2005.

Item 6 QIT to review entire New Products procedure: Item assigned to Research Division. Information provided by Michelle Page. A QIT has been formed to look at the item. Meeting over the next several months have been scheduled. Target date June 2005.

Item 7, Section 00555, Prosecution and Progress, Liquidated Damages Table. Complete additional review and statistical analysis of Liquidated Damages table. Pending for April agenda.

Item 8, Standards Committee Policy 08A-5: Item on agenda for approval.

Item 9, AT 4, Typical Ramp Meter Signal Head Mounting: Item on agenda for approval.

Item 10, SL 12, Traffic Counting Loop Detector Details: Item on agenda for approval.

Item 11, Open Range Cattle Issues: Target date June 2005.

11. Meeting Improvements (on-going agenda item) (Agenda Item 11).

None

12. Other Business:

Barry handed out information on two items.

Item 1: Barry said Standard Drawings brought to the Standards Committee for discussion or approval must use the latest DGN file available from the Standards Web site or obtained directly from the Standards Section. He said to always check with the Standards Section first.

He said this reduces the workload on the Standards Section and the chance of missing formatting and editorial changes made during period drawing reviews. Margaret periodically reviews each drawing for proper formatting and line weights. Problems are corrected but the drawing may not be published. Over the last several months she has had to re-accomplish hours of work because old, outdated files were used. We did approve using old files during the transition from 2004 to 2005 Standards. This was the exception, not the rule.

The same applies for drawings brought to the Standards Committee for approval. Updates after the meeting have to be done to the files from the Standards Section, not the file maintained by the responsible area. Barry says after every meeting he tries to send the latest files to the responsible person so any changes done by Margaret aren't lost. Barry said if he doesn't do that then that person should contact the Standards Section for the latest file.

Item 2: Barry said this came about because of questions they received recently. He said the next two pages in the handout list the Department Special Provisions available from the Standards Web area.

Barry said there are a couple of "S" version Special Provisions that replace the Standard while at the same time there is an "M" Supplemental Specification for the same section. He said there has been some confusion on what file to use. Barry explained that the Special Provision takes precedence over the Supplemental Specification in this case. In this case the Supplemental Specification doesn't mean anything. The Supplemental Specification is still needed on the chance the designer decides not to use the Special Provision and instead uses the Standard. Barry said the purpose of putting the Special Provisions on the Web site is to make the files available for region use so they don't have to recreate those sections. That way each region is working from the same information.

Barry said to help clean up this confusion they would like everyone to look at the Department Special Provisions for their respective areas and see if we can get the Specials approved as Standards. This way the Special Provision can be removed.

Jim asked if these files are the specific ones to be looked at. Barry said this list is all of the Department Special Provisions that they have. He said all need to be looked at except 00250S (Prebid Conference) and 02742S (Project Specific Surfacing Requirements). These two are project specific and can't be made Standards.

Everything else needs to be looked at to see if it can be brought to the Committee for approval as a Supplemental Specification. Barry said Tim is look at those related to Materials and that everyone else should look at the list to see what applies to their area.

Barry said it is fine if something needs to stay a Special Provision. Barry said Cameron Petersen already indicate one of their files needs to stay a Special Provision for another construction season.

Barry said they need to get as many as possible brought to the Committee for approval.

Adjourned.

The next regular meeting of the Standards Committee has been scheduled for Thursday, June 30, 2005, at 8:00 a.m., in the 1st floor conference room of the Rampton Complex.

Approval of Minutes: The foregoing minutes were approved at a meeting of the Standards Committee held _____, 2005.

Assignment/Action Item Log (Updated May 4, 2005 following the meeting)

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
June 27, 2002	1	Standard Drawing PV 8 (Rumble Strip)	Darrell to assign someone from Construction.	Open	June 2005 meeting
October 31, 2002			Richard Miller from Maintenance. Fred Doehring. Betty Purdie. Robert Hull to head the group.		
December 19, 2002		- Process being reviewed. Research looking into testing.	Robert Hull Stan Burns		
February 27, 2003		- A policy is to be developed over the next several months.	Robert Hull		
April 24, 2003		- No change	Stan Burns		
June 26, 2003		- No further updates. Target date changed.			
August 28, 2003		- Progress continuing. To work with Research.			
October 30, 2003		- Process continuing.			
December 18, 2003		- Still being worked.			
February 26, 2004		- No update			
April 29, 2004		- Jim to follow up with Research.			
June 24, 2004		-Research has study with University of Utah			
August 26, 2004		- Research study complete. Policy being written.			
October 21, 2004		- Waiting for BYU study results.			
February 24, 2005		- Still being reviewed. Target changed.			
April 28, 2005		- No change			

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
December 19, 2003	2	- Painted Cattle Guard: With assistance from Research Division, Traffic and Safety to make recommendation.	Glenn Schulte John Leonard	Open	June 2005 meeting
February 27, 2003		- No status.			
April 24, 2003		- Traffic Engineering Panel to review			
June 26, 2003		- No change. Not due until August.			
August 28, 2003		- No change.			
October 30, 2003		- Traffic and Safety and Research to work together to determine history and usage requirements.	Bob Hull Stan Burns		
December 18, 2003		- No change in target date.			
February 26, 2004		- Not on agenda.			
April 29, 2004		- Still gathering information			
June 24, 2004		- No report. E-mail sent to SAF and RES.			
August 26, 2004		- Cattle Guard – Put team together to look into information related to cattle guard type and make a recommendation to include a usage policy and related standard specifications and drawings.	John Leonard		
October 21, 2004		- No change.			
February 24, 2005		- No change. Work priorities prevented further review.			
April 28, 2005		- No change			

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
August 28, 2003	3	A new drawing depicting the four-legged intersection to be developed.	John Leonard	Open	June 2005 meeting
October 30, 2003		No change in status.			
December 18, 2003		Target date set.			
February 26, 2004		No change.			
April 29, 2004		Being developed			
June 24, 2004		No report. Not due until August. E-mail sent to SAF and RES.			
August 26, 2004		No change except target date.			
October 21, 2004		Still under development. Target date moved.			
February 24, 2005		No change. Work priorities prevented further review.			
April 28, 2005		No change			

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
April 29, 2004	4	Traffic Barriers: Task group to gather information and make a recommendation for a barrier type.	Jason Davis	Open	June 2005 meeting
June 24, 2004		Review still in progress.	Tim Biel		
August 26, 2004		No change			
October 21, 2004		No change			
February 24, 2005		No change. Work priorities prevented further review. Cable barrier complicating issue.			
April 28, 2005		No change. Still compiling data.			
August 26, 2004	5	Form a QIT with Jim McMinimee and Dave Miles to review the entire New Products procedure.	Stan Burns	Open	June 2005 meeting
October 21, 2004		Still being worked.			
February 24, 2005		Meeting have been schedules	Shana Lindsey Michelle Page		
April 28, 2005		No change			
February 24, 2005	6	Open Range Cattle Issues: Develop relevant information and guidelines.	Robert Hull	Open	June 2005 meeting
April 28, 2005		No change			

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
April 28, 2005	7	For Section 00555, Prosecution and Progress, Liquidated Damages Table write letter to FHWA indicating the information has been reviewed but that no change is being recommended.	Pete Negus	Open	As soon as possible.

Closed Items From Last Meeting (April 28, 2005)					
Date Initiated/Updated	Prior Item #	Action	Assignments	Status	Target Date
February 26, 2004	4	Research in conjunction with Environmental to put together a proposal/drawing for deer ramps.	Blaine Leonard Barry Sharpe	Closed	Closed
April 29, 2004		No new information reported.			
June 24, 2004		No report. No target date. E-mail sent to SAF and RES.			
August 26, 2004		No new information			
October 21, 2004		Meeting set up with Dept of Wildlife Resources. No target date.			
February 24, 2005		Presented at February meeting. Open items. Supplemental Specification 02826, Deer Ramp and Standard Drawings FG 4A and FG 4B, Deer Ramps: Specification to be updated to include "High Migratory" information. Drawings to be clarified to include possibly adding a third drawing so "High Migratory" and typical are separate.	Michelle Page		
April 28, 2005		Supplemental Specification number updated to 02827, Deer Crossing. Supplemental Specification and Standard Drawings FG 4A, Deer Crossing Detail and FG 4B, Deer Ramp Details approved. Closed.			

October 21, 2004 February 24, 2005 April 28, 2005	7	Section 00555, Prosecution and Progress, Liquidated Damages Table. Complete additional review and statistical analysis of Liquidated Damages table. Finalizing Decision made to remain as is and not update the table. Item closed.	Pete Negus	Closed	Closed
February 24, 2005 April 28, 2005	8	Standards Committee policy to be updated to reflect the change in the FHWA approval procedure and desired changes to the submittal sheet dealing with cost-benefit analysis and the Minimum Sampling and Testing Guide. Change to submittal sheet published to the Web on March 1, 2005. Policy update approved. Closed	Barry Axelrod	Closed	Closed
February 24, 2005 April 28, 2005	9	AT 4, Typical Ramp Meter Signal Head Mounting: Drawing to be updated per the discussion that the current details are not constructible. “Not Used” references to be removed. Standard Drawing AT 4 approved. Closed.	Sam Sherman	Closed	Closed
February 24, 2005 April 28, 2005	10	SL 12, Traffic Counting Loop Detector Details: Answer contact question for note 1. Standard Drawing SL 12 approved. Closed.	Sam Sherman	Closed	Closed

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Standards Committee Agenda Items Section

Submittal Sheets, Supplemental Specification Drafts, Standard Drawing Drafts, and other supporting data for the June 30, 2005 Standards Committee meeting follows.

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Standards Committee Submittal Sheet

Name of preparer: Terry Johnson
Title/Position of preparer: Senior Landscape Architect
Specification/Drawing/Item Title: EN Standard Drawings, Temporary Environmental Controls, Environmental Control Supervisor
Specification/Drawing Number: Std. Dwg. EN1-7, Std. Spec. 01571 & 01574

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

   1. We have received comments on the current standards from Construction and Maintenance requesting changes.

   2. Some of the Best Management Practices (BMP) are out-dated and need to be eliminated and replaced with more state-of-the-art practices.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

   1. Temporary Environmental Controls Spec: Old BMP's that are no longer used will need to be eliminated from the list and new ones will need to be added to the list.

   2. ECS Spec: No changes.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

No comments were received.

ACEC Comments: (Use as much space as necessary.)

No comments were received.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Region Landscape Architects

All of the region landscape architects have reviewed and commented on the Standard Drawings and the Specifications. We have met and discussed the comments. The Drawings and Specifications as they now exist reflect our resolution. The region landscape architects are on construction projects and receive input from construction personnel regarding necessary improvements to Standards.

Construction Engineers

A committee consisting of Construction and Maintenance personnel reviewed the Standard Drawings. There comments have been incorporated.

Contractors (Any additional contacts beyond “C” above.)

We have an annual meeting with contractors who do erosion control on UDOT projects.

Some of their comments have been included in these changes. We also conduct ECS classes every year in contractors attend and comment on items of concern.

Suppliers

Included in the same meeting noted above, suppliers are also invited to discuss new products to be considered. Some changes have been made to incorporate better products.

Consultants (as required) (Any additional contacts beyond "C" above.)

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No additional testing required.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

   No additional costs are anticipated, if anything, there should be a cost reduction. -
   - Replacement BMP's cost less than old ones.
   - Giving the contractor material options.
   - Simplified installation procedures.
   - Provided charts to better estimate amount of material required.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

   NA

3. Life cycle cost.

   NA

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Update out of date practices with more state of the art practices.

H. Safety Impacts?

NA

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Other state DOT's are using the new items incorporated and they seem to be working fine.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 01571

TEMPORARY ENVIRONMENTAL CONTROLS

Delete Section 01571 and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Requirements for controlling erosion on the construction site and diminish the amount of sediment leaving the site, and related areas under the Contractor's control.

B. Requirements for installing, maintaining, and removing temporary erosion control measures.

1.2 RELATED SECTIONS

A. Section 01574: Environmental Control Supervisor

B. Section 02373: Riprap

C. Section 02610: Pipe Culverts

D. Section 02613: Culvert End Sections

E. Section 02922: Seed, Turf Seed, and Turf Sod

1.3 REFERENCES

A. AASHTO M 288: Geotextile Specifications for Highway Applications.

B. Storm Water Pollution Prevention Plan (SWPPP)

1.4 TYPES

A. Check Dam (EN Series Standard Drawings):
   1. A temporary fiber roll or stone structure that is placed across a ditch to intercept and pond sediment-laden runoff, thereby reducing the water velocity and allowing suspended sediment to settle. Constructed so water will flow over a low point in the middle of the dam and not around the sides.

B. Silt Fence (EN Series Standard Drawings):
   1. A geotextile fabric fence installed to intercept and pond sediment-laden sheet flow runoff allowing suspended sediment to settle.

C. Slope Drain (EN Series Standard Drawings):
   1. A polyethylene pipe placed on a slope that collects and transports storm runoff down the face of a slope and is used until permanent drainage facilities are installed or vegetation growth is adequate.

D. Temporary Berm (EN Series Standard Drawings):
   1. A ridge of compacted soil, with or without a shallow ditch that diverts storm runoff from a recently constructed slope to a controlled release point.

E. Drop-inlet Barrier (EN Series Standard Drawings):
   1. A fiber roll, silt fence, or stone barrier placed around a drop-inlet that intercepts and ponds sediment-laden runoff allowing suspended sediment to settle. If the pond height reaches the top of the barrier, water flows over the barrier and into the drop-inlet.

F. Pipe Inlet Barrier (EN Series Standard Drawings):
   1. Consists of a horseshoe-shaped barrier protecting a pipe inlet that intercepts and ponds sediment-laden runoff before it enters a pipe allowing suspended sediment to settle.

G. Curb Inlet Barrier (EN Series Standard Drawings):
   1. A protective barrier placed across a curb inlet that intercepts and ponds sediment-laden runoff before it enters a curb inlet.

H. Sediment Trap (EN Series Standard Drawings):
   1. An excavated basin, usually installed at low points on a construction site, that intercepts and ponds sediment-laden concentrated flows allowing suspended sediment to settle.

I. Stabilized Construction Entrance (EN Series Standard Drawings):
   1. A layer of rock placed at a construction site entrance that removes mud from vehicle tires before they leave the construction site and drive onto a paved road.

J. Straw Bale Barrier (EN Series Standard Drawings):
   1. Consists of straw bales butted end to end and used in active construction areas where a silt fence would fail. Installed to intercept and pond sediment-laden sheet flow runoff allowing suspended sediment to settle.

PART 2 PRODUCTS

2.1 MATERIALS

A. Check dams:
   1. Fiber Roll:
      a. Fiber Roll: Contact Engineer for Approved List of Fiber Roll Products. Approved list is updated annually.
      b. Wood stakes: commercial quality lumber 2-inch square (nominal) by 3 feet.
      c. Channel Liner: Contact Engineer for Approved List of Channel Liners. Approved list is updated annually.
   2. Stone: Well-graded within 2 inches to 6 inches in diameter.

B. Silt Fence:
   1. Silt Fence Fabric: See AASHTO M 288 (Table 6 – Temporary Silt Fence Property Requirements).
   2. Wood Post: commercial quality lumber, 2-inch square (nominal) by 4 feet in length.
   3. Fasteners: Staples, wire, zip ties, or nails sufficient to maintain the fabric's attachment to post.

C. Slope Drain:
   1. Pipe Culverts: Refer to Section 02610.
   2. End Section: Refer to Section 02613.
   3. 9 inch Loose Riprap: Refer to Section 02373.
   4. Wooden stakes: commercial quality lumber 2-inch square (nominal) by 3 feet.

D. Temporary Berm:
   1. Existing Soil.

E. Drop-Inlet Barriers:
   1. Fiber Roll: Refer to this Section.
   2. Stone: Well-graded within 2 inches to 6 inches diameter.
   3. Silt-Fence: Refer to this Section.
      a. Wood stud: 2 inches x 4 inches (nominal).

F. Pipe-Inlet Barrier:
   1. Stone: Well-graded within 2 inches to 6 inches in diameter.

G. Curb Inlet Barrier:
   1. Concrete Building Blocks.
   2. Stone: Well-graded within 2 inches to 6 inches diameter
   3. Wire Mesh: 0.5 inch by 0.5 inch openings.
   4. Wood stud: 2 inches x 4 inches (nominal).

H. Sediment Trap:
   1. 9 inches Loose Riprap: Refer to Section 02373.

I. Stabilized Construction Entrance:
   1. Stone: Well-graded within 2 inches to 6 inches in diameter.

J. Straw Bale Barrier:
   1. Standard Straw Bales: Obtained from weed free fields that have been certified by the Utah Department of Agriculture.

PART 3 EXECUTION

3.1 PREPARATION

A. Follow the Storm Water Pollution Prevention Plan (SWPPP) in the plan set.
   1. Address in the SWPPP all disturbed areas on a project including staging areas, haul roads, borrow sites, stockpiles, and disposal areas.
   2. If SWPPP is not provided in the plans, create and submit a plan to the Engineer for approval.
   3. Obtain written approval from the Engineer to change the SWPPP.

B. Designate an Environmental Control Supervisor (ECS) who will:
   1. Work directly with the Department SWPPP coordinator designated by the Engineer.
   2. Be available as needed to coordinate the SWPPP, inspect and maintain sediment control devices, and resolve other issues.

C. Do not start earth-disturbing work until SWPPP is approved, and appropriate temporary erosion and sediment control measures are in place.

D. Use the most restrictive requirement if a conflict occurs between erosion and sediment control specifications and federal, state, or local agency's laws, rules, or regulations.

3.2 INSTALLATION

A. Provide or construct measures such as check dams, silt fence, slope drains, drop-in inlet barriers, sediment traps, and other erosion control devices or methods to reduce erosion and sedimentation during construction and/or shutdown periods.

B. Follow installation procedures outlined in the EN Series Standard Drawings.

3.3 INSPECTIONS

A. Inspect all denuded areas during construction to determine potential erosion problems. Pro-actively apply corrective measures in a timely manner as required.

B. Inspect all sediment retention structures. Refer to Section 01574.

3.4 MAINTENANCE

A. Maintain temporary sediment control devices to ensure they function properly until all disturbed areas draining to them are stabilized.

B. Remove and properly dispose of sediment when it has accumulated half way up the overall structure height or it interferes with the performance of the structure.

C. Dispose of sediment removed from erosion control structures in a manner acceptable to the Engineer.

3.5 REMOVAL

A. After all seeding and mulching has been placed and just before final closeout of the project, remove any remaining sediment from behind and around erosion control features and remove all temporary erosion control features unless directed differently by the Engineer.

B. Seed areas where the sediment was removed following Section 02922.

END OF SECTION

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Supplemental Specification
2005 Standard Specification Book

SECTION 01574M

ENVIRONMENTAL CONTROL SUPERVISOR

Delete Article 1.1, paragraph A and replace with the following:

A. Description of the responsibilities of the Contractor's Environmental Control Supervisor (ECS) to administer environmental compliance on the project.

Add Article 1.3, paragraph B:

B. Utah Storm Water General Permit for Construction Activities

Add Article 3.1, paragraphs B

3.1 GENERAL RESPONSIBILITIES

F. Know what is contained in Utah Storm Water General Permit for Construction Activities – Permit No.: UTR100000 and comply with the outlined conditions. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

G. When a U.S. Army Corps of Engineers Nationwide and Individual Permits or a Utah Division of Water Rights Regional General Permit 40 is issued on a project, know and follow the General and Special Conditions associated with these permits.

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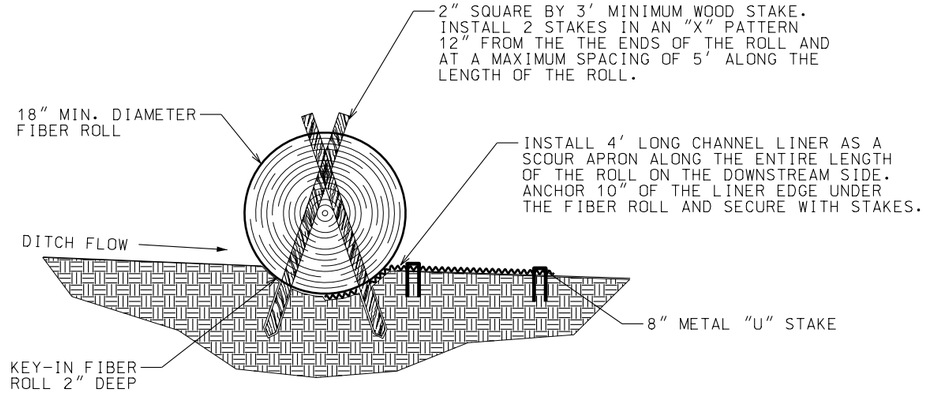
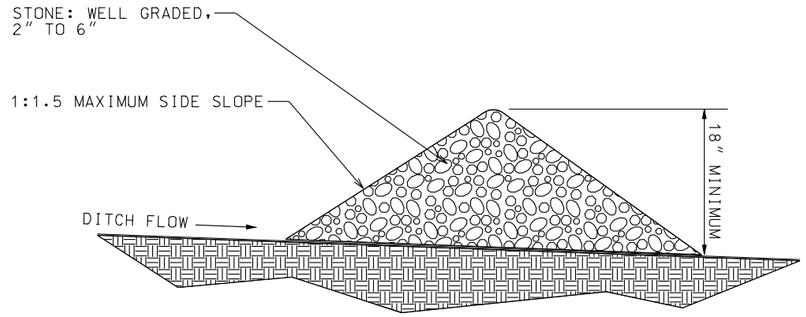
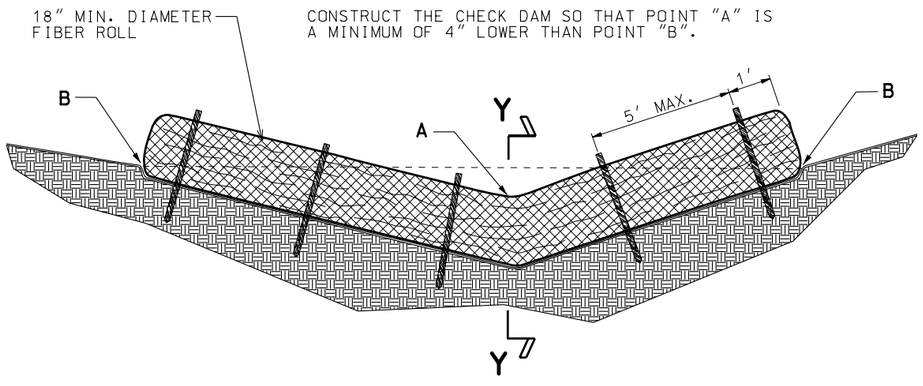
CHECK DAMS



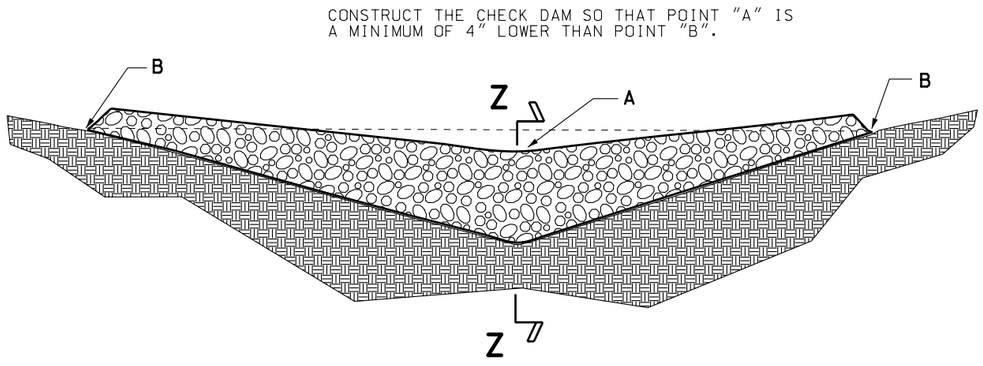
SECTION Y – Y



SECTION Z – Z



FIBER ROLL CHECK DAM



STONE CHECK DAM

MATERIAL QUANTITY CHART		
DITCH SIDE SLOPE	LENGTH OF FIBER ROLL REQUIRED FOR HALF OF DITCH	CUBIC YARDS OF STONE REQUIRED FOR HALF OF DITCH
2:1	4.5'	0.25
3:1	6'	0.35
4:1	8'	0.5
6:1	11.5'	0.7
8:1	15'	1.0
10:1	18.5'	1.2
12:1	22.5'	1.4

EXAMPLE: A CUT DITCH WITH A 6:1 FORE SLOPE AND A 2:1 BACK SLOPE WOULD REQUIRE A 16' MIN. FIBER ROLL OR 0.95 CUBIC YARDS MIN. OF STONE.

NOTES FOR CHECK DAMS:

1. PLACE A CHECK DAM AT EVERY TWO-FOOT DROP IN ELEVATION ALONG THE CUT DITCH.
2. A 9" TO 12" DIAMETER FIBER ROLL CAN BE USED IN PLACE OF THE 18" ROLL PROVIDED A ROLL IS INSTALLED AT EVERY ONE-FOOT DROP IN ELEVATION ALONG THE CUT DITCH.
3. PLACE CHECK DAMS PERPENDICULAR TO THE FLOW LINE OF THE DITCH.
4. DO NOT PLACE CHECK DAMS ACROSS NATURAL STREAM BEDS.
5. DO NOT USE STONE CHECK DAMS WITHIN CLEAR ZONES.
6. CONSTRUCT CHECK DAMS SO THAT WATER DOES NOT FLOW AROUND THE ENDS OF THE DAM.
7. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.
8. AFTER SURROUNDING AREAS HAVE BEEN SEEDED AND MULCHED, SPREAD ROCK FROM CHECK DAMS TO LINE THE CUT DITCH AND BREAK APART FIBER ROLLS AND SPREAD THE STRAW OVER SEEDED AREAS.

REVISIONS				
NO.	DATE	APPR.	REMARKS	
1	06/30/05	T.J.	REVISED ENTIRE DRAWING.	

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL — JUN.30.2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JUN.30.2005 DATE
DEPUTY DIRECTOR

TEMPORARY EROSION CONTROL (CHECK DAMS)
STANDARD DRAWING TITLE

STD DWG
EN 1

DGN File: L:\Standard Drawings\Imperial\2005Working\StandardsCommitteeFiles\June05\en01.dgn
13-JUN-2005

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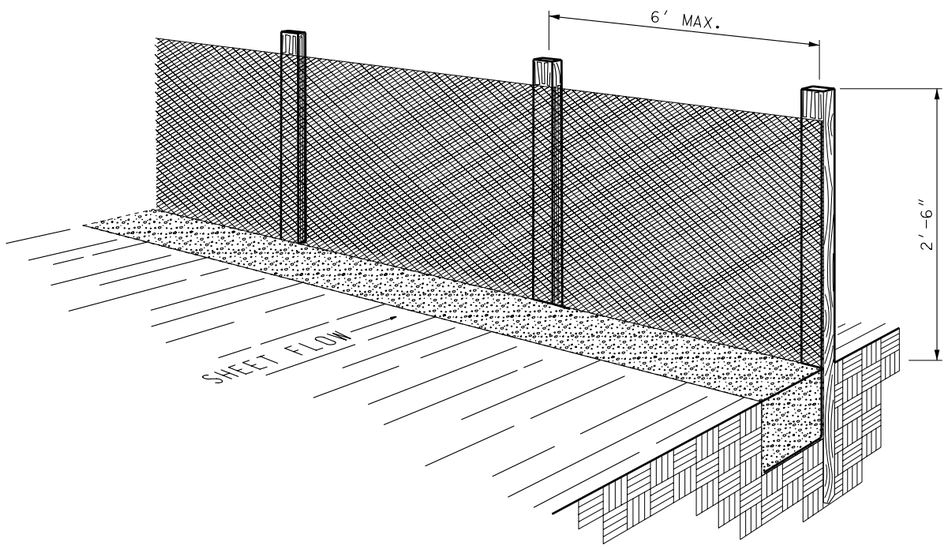
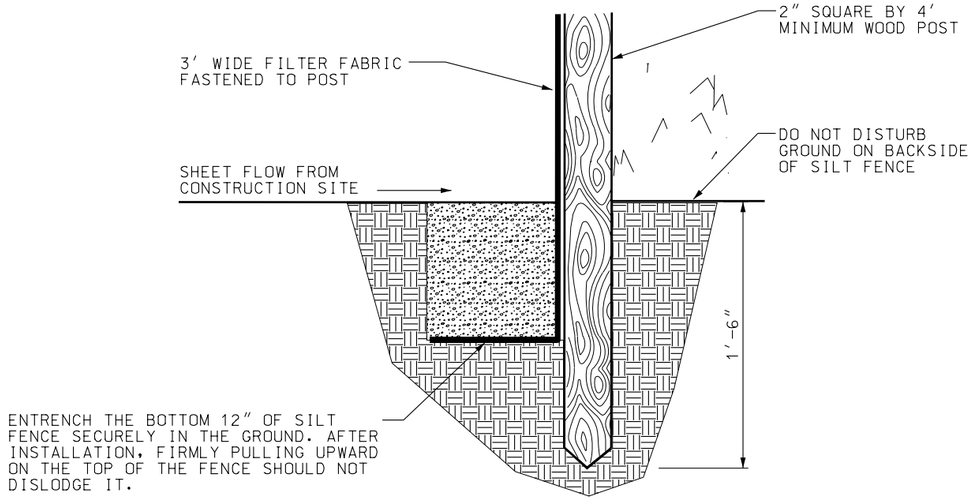
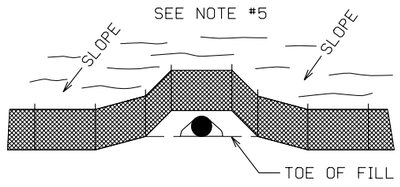
SILT FENCE



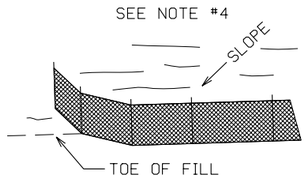
PERSPECTIVE VIEW



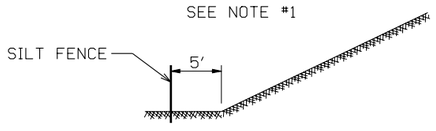
SECTION



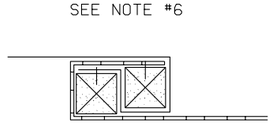
AROUND A PIPE OUTLET



AT END OF SILT FENCE



AT TOE OF FILL SLOPE



SPLICES (TOP VIEW)

SILT FENCE INSTALLATIONS

NOTES FOR SILT FENCE:

1. WHERE ENVIRONMENTALLY PERMITTED, POSITION THE SILT FENCE 5′ BEYOND THE TOE OF SLOPE.
2. TO AVOID CREATING LOW POINTS ALONG THE SILT FENCE, ALIGN THE FENCE ALONG THE CONTOUR AS MUCH AS POSSIBLE. WHERE EXCESSIVE RUNOFF WILL ACCUMULATE AT A LOW POINT, PROVIDE AN OPENING IN THE FENCE AND INSTALL A SEDIMENT TRAP.
3. WHEN EXCAVATING THE TRENCH, USE MACHINERY THAT WILL MINIMIZE DISTURBANCE.
4. TO PREVENT RUNOFF FROM FLOWING AROUND THE ENDS OF THE SILT FENCE, RUN THE ENDS OF THE FENCE UP SLOPE.
5. DO NOT PLACE SILT FENCE ACROSS POTENTIAL CONCENTRATED FLOWS (e.g., PIPE OUTLETS, DRAINAGE CHANNELS, CUT DITCHES).
6. AVOID USING SPLICES ALONG THE FENCE AS MUCH AS POSSIBLE. IF A SPLICE IS NECESSARY, BEFORE POUNDING IN THE END POSTS, OVERLAP THE END POSTS AND TWIST 180 DEGREES.
7. MAINTAIN A PROPERLY FUNCTIONING SILT FENCE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL DISTURBED AREAS HAVE BEEN VEGETATED.
8. WHEN A STORM EVENT DEPOSITS SEDIMENT BEHIND THE FENCE, REMOVE THE SEDIMENT AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.
9. IN AREAS THAT HAVE BEEN SEEDED AND MULCHED, REMOVE SILT FENCE UNLESS THEY ARE PROTECTING A WETLAND OR WATER BODY.

NO.	DATE	APPR.	REMARKS
1	06/30/05	T.J.	REVISED ENTIRE DRAWING.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — JUN.30.2005 DATE
CHAIRMAN STANDARDS COMMITTEE — JUN.30.2005 DATE
APPROVED

TEMPORARY EROSION CONTROL (SILT FENCE)

STANDARD DRAWING TITLE

STD DWG
EN 2

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13-JUN-2005

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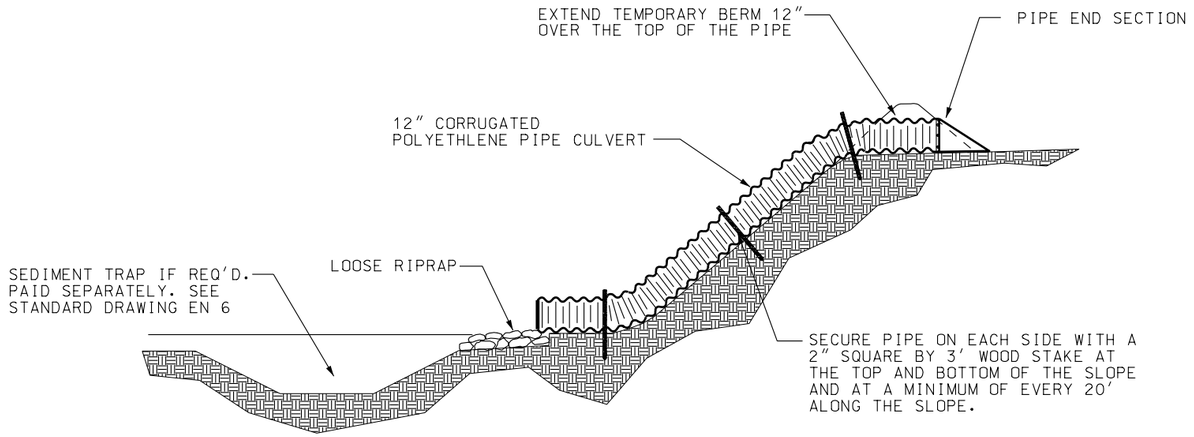
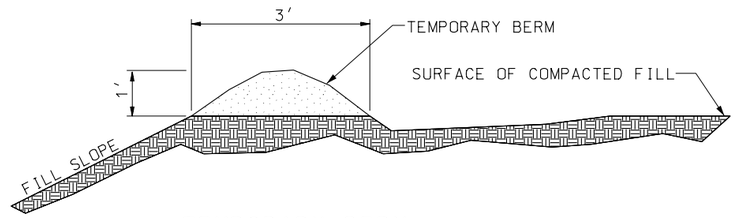
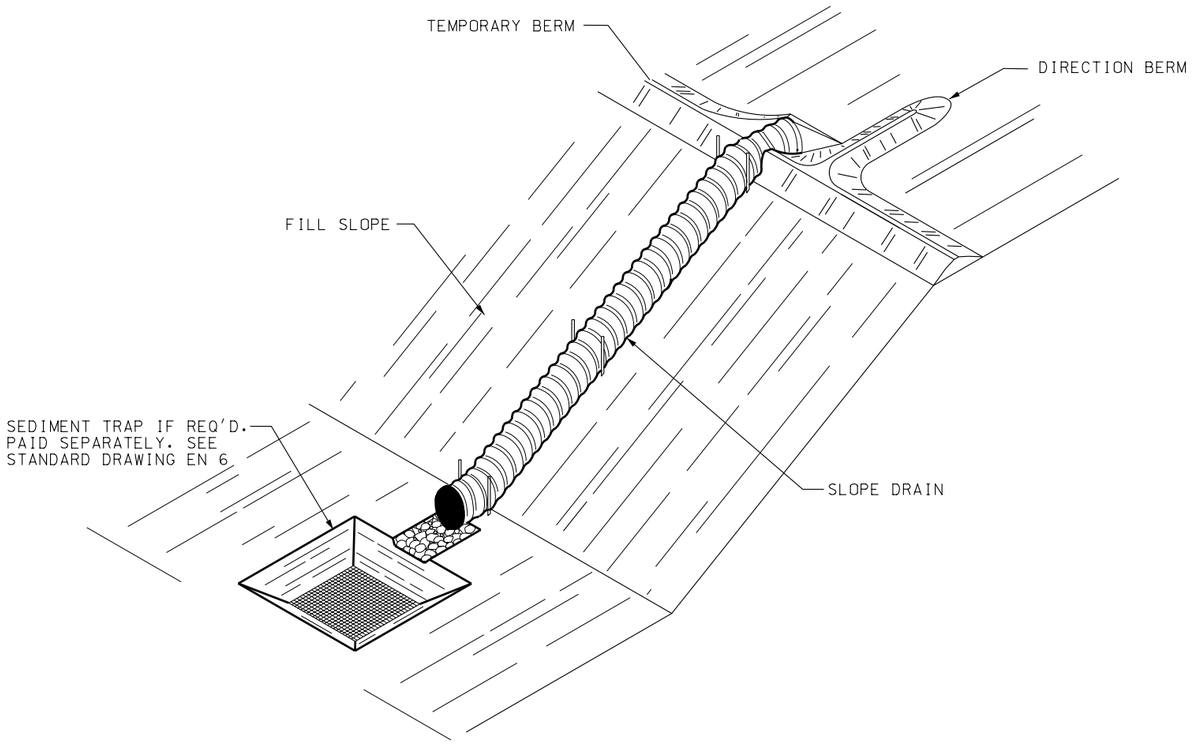
SLOPE DRAIN AND TEMPORARY BERM



SLOPE DRAIN SECTION



TEMPORARY BERM



SLOPE DRAIN ISOMETRIC

NOTES FOR TEMPORARY BERM:

1. COMPACT THE RIDGE OF EXISTING SOIL TO PROVIDE A NON-ERODIBLE BERM THAT DIVERTS STORM RUNOFF FROM RECENTLY CONSTRUCTED SLOPES. REPAIR ANY EROSION OF THE BERM IMMEDIATELY.
2. TEMPORARY BERMS ARE TYPICALLY USED IN CONJUCNCTION WITH SLOPE DRAINS.

NOTES FOR SLOPE DRAIN:

1. COMPACT THE SOIL SURFACE AND BERMS AROUND THE ENTRANCE TO THE PIPE END SECTION TO PREVENT WATER FROM UNDERMINING THE PIPE AND ERODING THE SLOPE. REPAIR ANY EROSION AROUND THE INLET, OUTLET OR SLOPE IMMEDIATELY.
2. SECURE THE PIPE TO THE GROUND EVERY 20' TO PREVENT PIPE MOVEMENT AND SUBSEQUENT FAILURES DURING STORM EVENTS.
3. USE WATER-TIGHT FITTINGS AT ALL SLOPE DRAIN CONNECTIONS.
4. EXTEND THE SLOPE DRAIN AS REQUIRED TO COINCIDE WITH THE HEIGHT OF THE EMBANKMENT.
5. EXTEND THE DRAIN A MINIMUM OF 3' BEYOND THE TOE OF THE SLOPE AND PROVIDE OUTLET PROTECTION.
6. 50 PERCENT OF THE RIPRAP TO BE BETWEEN 6" AND 8" WITH A MAXIMUM SIZE OF 12" AND A MINIMUM SIZE OF 4".
7. IF A SEDIMENT TRAP CANNOT BE CONSTRUCTED AT THE PIPE OUTLET PROVIDE A SEDIMENT TRAPPING DEVICE BEFORE THE PIPE INLET.
8. MAINTAIN SLOPE DRAINS UNTIL SLOPES HAVE BEEN PERMANENTLY STABILIZED. REMOVE SLOPE DRAINS AS DIRECTED BY ENGINEER.

NO.	DATE	APPR.	REMARKS
1	06/30/05	T.J.	REVISED ENTIRE DRAWING.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JUN.30.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JUN.30.2005 DATE
DEPUTY DIRECTOR

TEMPORARY EROSION CONTROL (SLOPE DRAIN AND TEMPORARY BERM)

STANDARD DRAWING TITLE

STD DWG
EN 3

DGN File:L:\Standard_Drawings\Imperial\2005Working\StandardsCommitteeFiles\June05\en03.dgn
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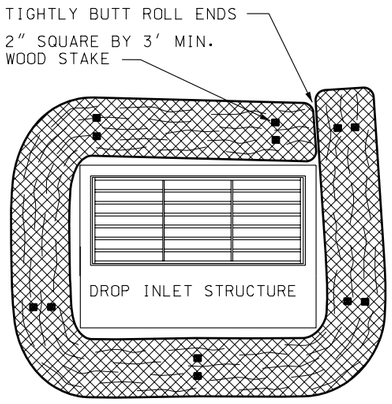
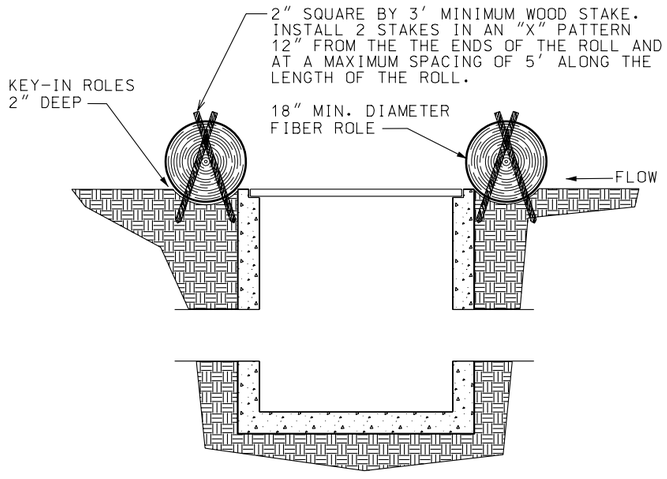
DROP INLET BARRIERS

FIBER ROLL DROP INLET BARRIER



PLAN VIEW

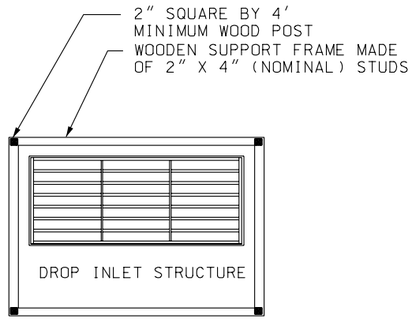


SECTION

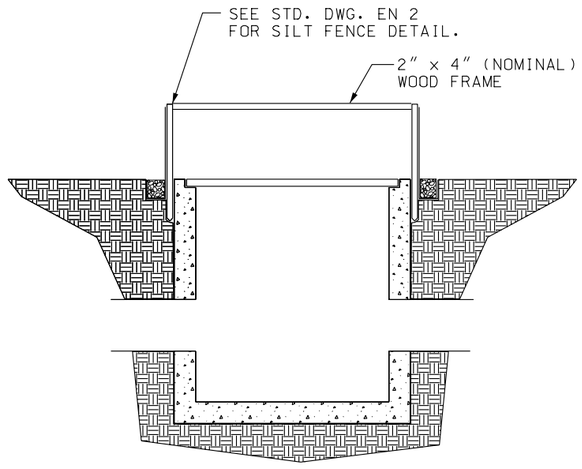
NOTES:

1. KEY-IN FIBER ROLLS 2" DEEP AROUND THE PERIMETER OF THE DROP INLET STRUCTURE AND STAKE AS SHOWN.
2. OVERLAP THE ENDS OF THE FIBER ROLL AT LEAST 18".
3. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOPS OF THE ROLLS ARE NOT HIGHER THAN THE ADJACENT ROADWAY.
4. MAINTAIN A PROPERLY FUNCTIONING FIBER LOG BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

SILT FENCE DROP INLET BARRIER



PLAN VIEW

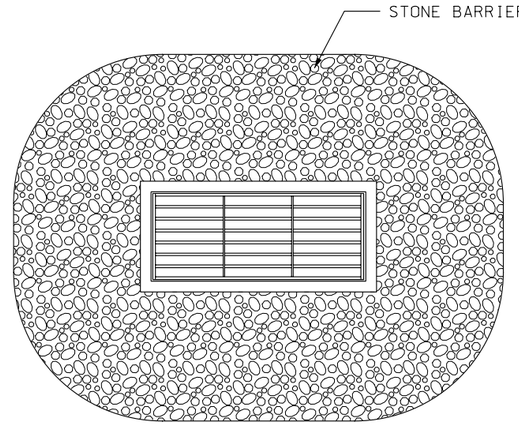


SECTION

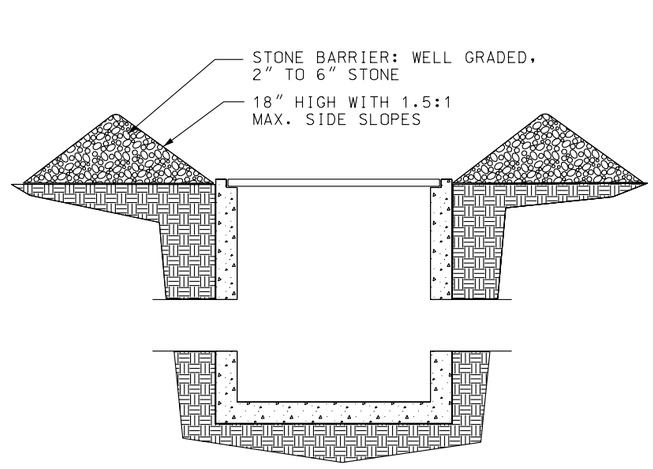
NOTES:

1. ENTRENCH THE BOTTOM 18" OF SILT FENCE SECURELY IN THE GROUND AROUND THE PERIMETER OF THE DROP INLET.
2. DRIVE POSTS AT EACH CORNER OF THE INLET STRUCTURE. IF THE DISTANCE BETWEEN CORNER POSTS EXCEEDS 4', PLACE ANOTHER POST(S) BETWEEN THEM.
3. CROSS-BRACE THE TOPS OF ALL POSTS WITH A WOODEN FRAME MADE OF 2X4 STUDS. USE NAILS OR SCREWS FOR FASTENING.
4. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOP OF THE SILT FENCE IS NOT HIGHER THAN THE ADJACENT ROADWAY.
5. MAINTAIN A PROPERLY FUNCTIONING SILT FENCE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
6. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

STONE DROP INLET BARRIER



PLAN VIEW



SECTION

NOTES:

1. PLACE STONE BARRIER AS SHOWN AROUND THE INLET OPENING.
2. DO NOT USE STONE BARRIERS WITHIN THE CLEAR ZONE. INSTEAD USE THE FIBER ROLL OR SILT FENCE BARRIER.
3. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOP OF THE STONE BARRIER IS NOT HIGHER THAN THE ADJACENT ROADWAY.
4. MAINTAIN A PROPERLY FUNCTIONING STONE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	T.J.	REVISED ENTIRE DRAWING.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JUN.30.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JUN.30.2005 DATE
DEPUTY DIRECTOR

TEMPORARY EROSION CONTROL (DROP INLET BARRIERS)

STANDARD DRAWING TITLE

STD DWG
EN 4

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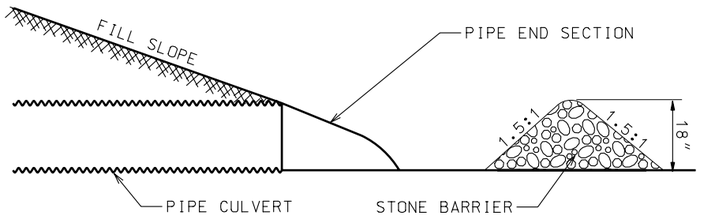
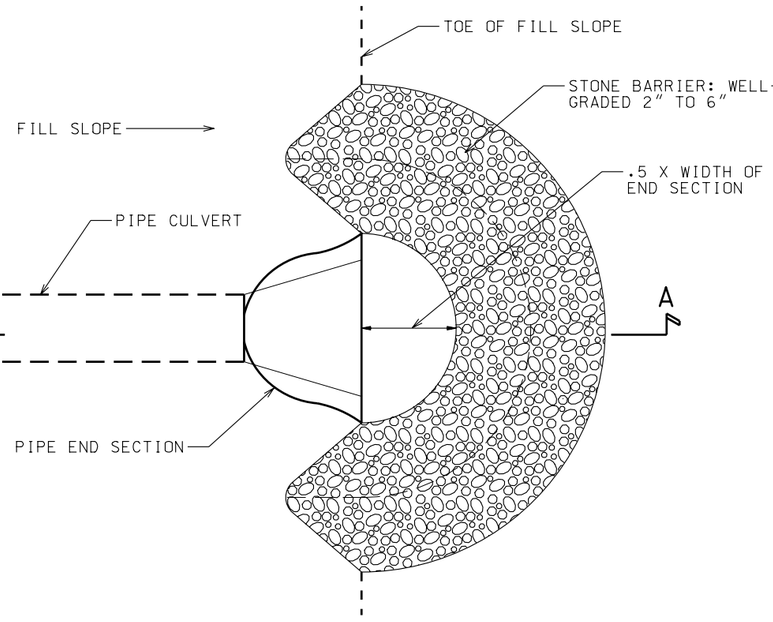
PIPE INLET BARRIER



SECTION A-A

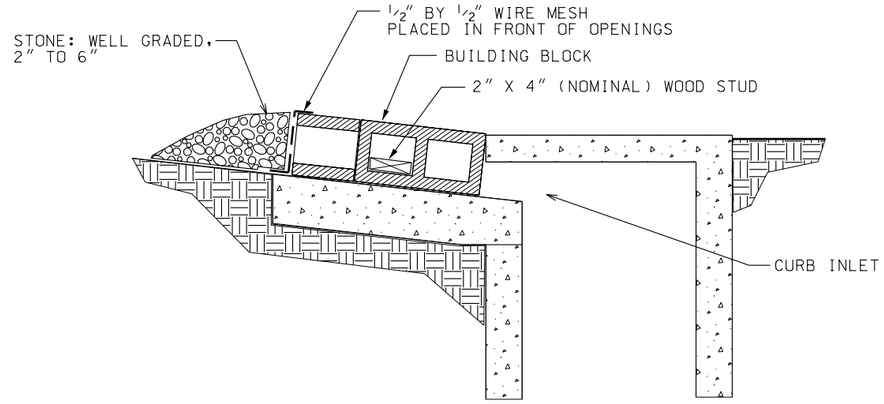


PLAN VIEW

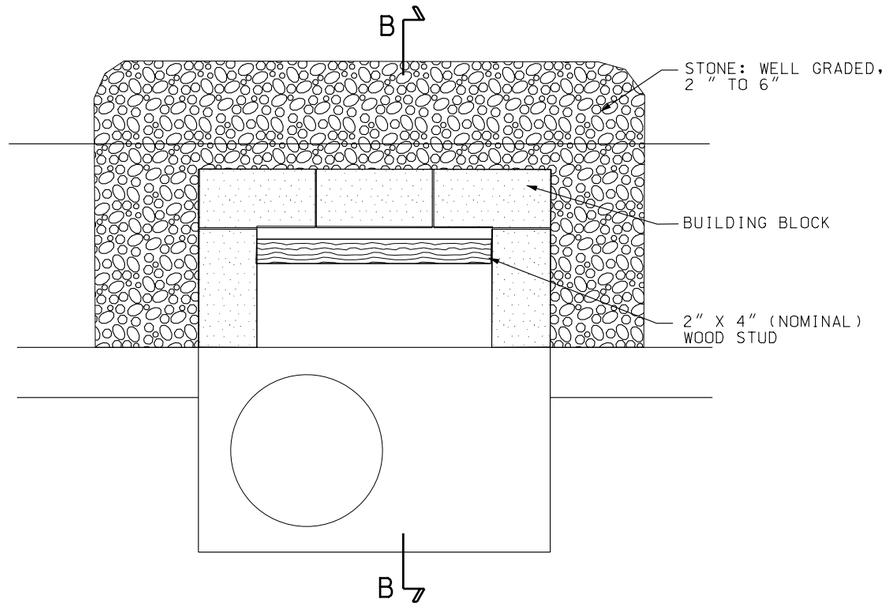
NOTES FOR PIPE INLET BARRIER:

1. PLACE PIPE INLET BARRIERS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. MAINTAIN A PROPERLY FUNCTIONING SEDIMENT BARRIER THROUGHOUT CONSTRUCTION.
3. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.
4. WHEN SURROUNDING AREAS HAVE BEEN SEEDED AND MULCHED, REMOVE THE STONE BARRIER BY SPREADING THE STONE ALONG THE CUT DITCH.
5. AN 18" MINIMUM DIAMETER FIBER ROLL MAY BE USED AS A SUBSTITUTE FOR THE STONE BARRIER. STAKE AS SHOWN ON STANDARD DRAWING EN-1.

CURB INLET BARRIER



SECTION B-B



PLAN VIEW

NOTES FOR CURB INLET BARRIER:

1. PLACE BUILDING BLOCKS, WIRE MESH AND STONE AS SHOWN AROUND THE CURB INLETS.
2. MAINTAIN A PROPERLY FUNCTIONING STONE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
3. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	T.J.	REVISED ENTIRE DRAWING. TITLE CHANGED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH 2012

RECOMMENDED FOR APPROVAL — JUN.30, 2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JUN.30, 2005 DATE
DEPUTY DIRECTOR

TEMPORARY EROSION CONTROL (PIPE INLET AND CURB INLET BARRIERS)

STANDARD DRAWING TITLE

STD DWG
EN 5

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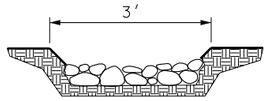
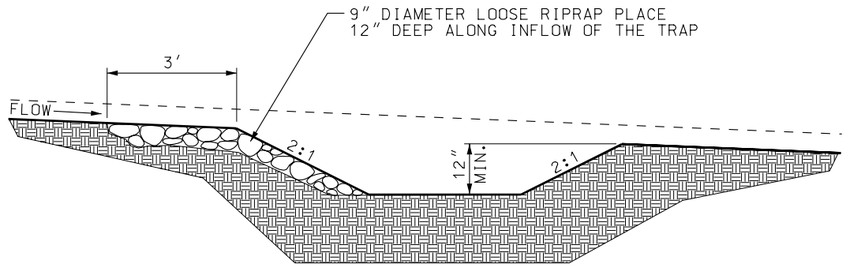
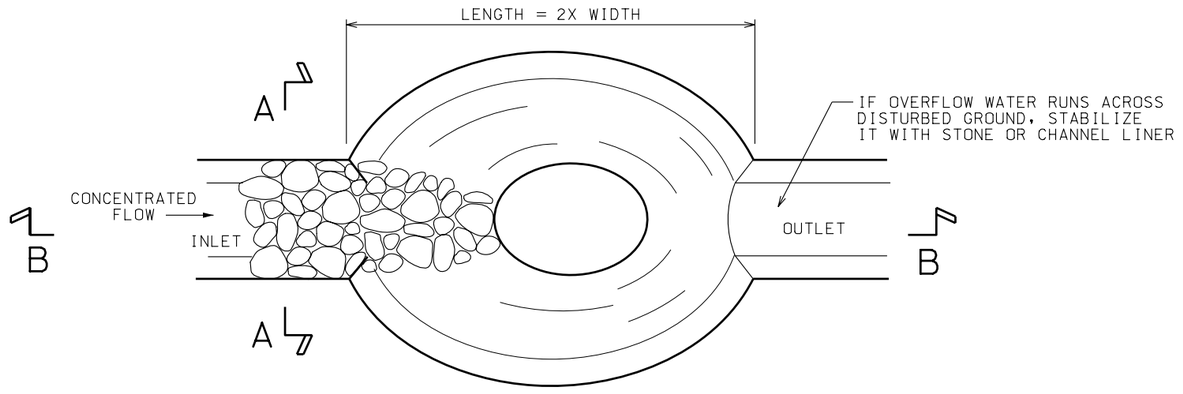
SEDIMENT TRAP



SECTION A-A



SECTION B-B

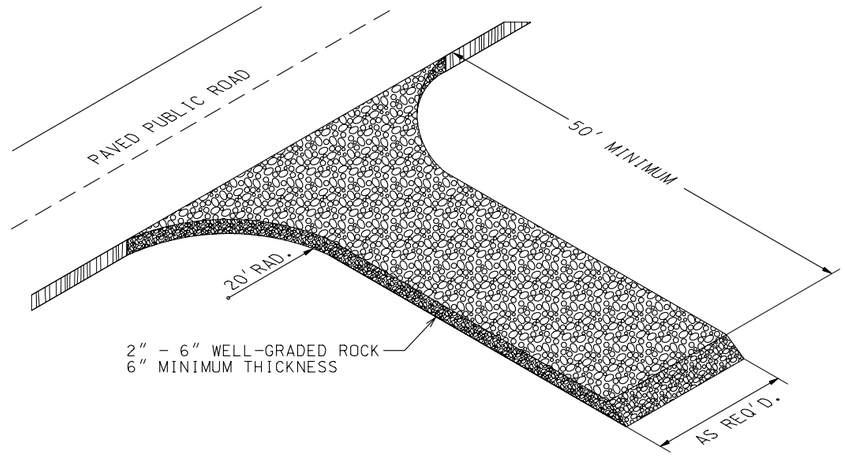


PLAN VIEW

NOTES FOR SEDIMENT TRAPS:

1. PLACE SEDIMENT TRAPS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. IDENTYFY THE STORAGE CAPACITY OF EACH SEDIMENT TRAP IN THE PROJECT PLAN SET.
3. CONSTRUCT TRAP LENGTH TWICE AS LONG AS THE WIDTH.
4. MAINTAIN A PROPERLY FUNCTIONING SEDIMENT TRAP THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE BASIN HAVE BEEN PAVED OR SEEDED AND MULCHED.
5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

STABILIZED CONSTRUCTION ENTRANCE



NOTES FOR STABILIZED CONSTRUCTION ENTRANCE:

1. PLACE STABILIZED CONSTRUCTION ENTRANCES AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. MAINTAIN A PROPERLY FUNCTIONING CONSTRUCTION ENTRANCE THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS HAVE BEEN PAVED.
3. DO NOT ALLOW VEHICLES LEAVING THE CONSTRUCTION SITE TO TRACK MUD ONTO PAVED ROADS.
4. BEFORE ENTERING PUBLIC ROADS, CHECK ALL DUAL- WHEELED VEHICLES. REMOVE ANY ROCK FROM BETWEEN THE WHEELS.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	T.J.	NEW DRAWING.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — JUN.30, 2005 DATE
CHAIRMAN STANDARDS COMMITTEE — APPROVED — JUN.30, 2005 DATE

TEMPORARY EROSION CONTROL (SEDIMENT TRAP AND STABILIZED CONSTRUCTION ENTRANCE)

STANDARD DRAWING TITLE

STD DWG
EN 6

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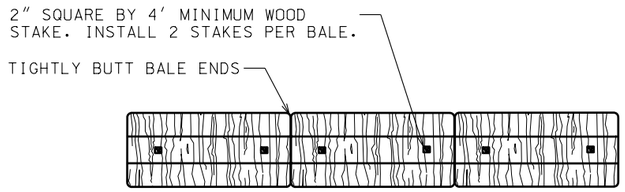
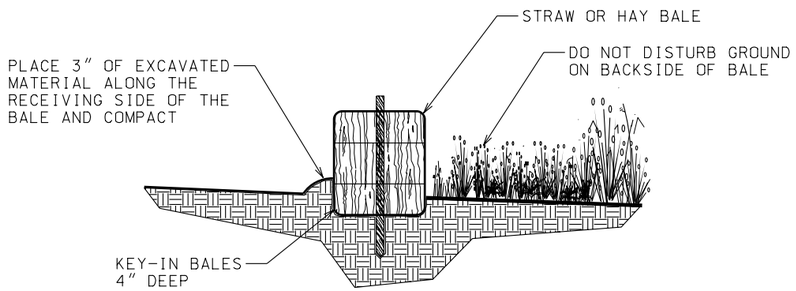
STRAW BALE BARRIER



PLAN VIEW



SECTION

NOTES FOR STRAW BALE BARRIER:

1. PLACE STRAW BALE BARRIERS BEFORE BEGINNING EARTH DISTURBING ACTIVITIES.
2. DO NOT PLACE STRAW BALE BARRIERS ACROSS NATURAL STREAM BEDS.
3. MAINTAIN A PROPERLY FUNCTIONING STRAW BALE BARRIER THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL DISTURBED AREAS HAVE BEEN SEEDED AND MULCHED.
4. AFTER SURROUNDING AREAS HAVE BEEN STABILIZED, REMOVE BALES AND STAKES AND LEVEL AND SEED THE AREA. BALES MAY BE BUSTED APART AND SPREAD AS MULCH.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	T.J.	NEW DRAWING.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL — JUN.30.2005 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — JUN.30.2005 DATE

DEPUTY DIRECTOR

TEMPORARY EROSION CONTROL (STRAW BALE BARRIER)

STANDARD DRAWING TITLE

STD DWG
EN 7

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Standards Committee Submittal Sheet

Name of preparer: Larry Montoya
Title/Position of preparer: Traffic and Safety Design Engineer
Specification/Drawing/Item Title: Pedestrian Access
Specification/Drawing Number: GW5A, GW5B, GW5C

Enter appropriate priority level:
(See last page for explanation) **3**

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

UDOT Maintenance requested removal of all vertical curb returns at pedestrian access ramps. The new design will incorporate a 2-foot wide transition section from curb cut to full height curb. The transition will eliminate a possible snag point for snowplows while maneuvering around corners and pass through raised island sections.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Anticipate no change in cost for the curb cut at the curb ramps. The pass through raised median will likely cost more due to the additional material and prep work required.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Refer to the Standards Committee Web site > Standards Committee Members at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)
Submitted. No comments received.

ACEC Comments: (Use as much space as necessary.)
Submitted. No comments received.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

This change was requested by UDOT Maintenance Division to eliminate potential snag points for snow plows. During our Statewide Ped Ramp seminar series I didn't receive any negative comments regarding this change.

Construction Engineers

Contractors (Any additional contacts beyond "C" above.)

Suppliers

Consultants (as required) (Any additional contacts beyond "C" above.)

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

None

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

   There would be additional costs for installing the pass-through on a raised median due to more concrete and the excavation work required much like a plowable end section.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

   No additional cost.

3. Life cycle cost.

   N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

   The additional concrete and excavation is necessary for the pass through raised median much like the plowable end section to properly construct.

H. Safety Impacts?

   This change will eliminate potential snag points for snow plows, and poses no safety concern for pedestrians or motorists.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

   This is already an acceptable option as noted on the current standard drawings.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

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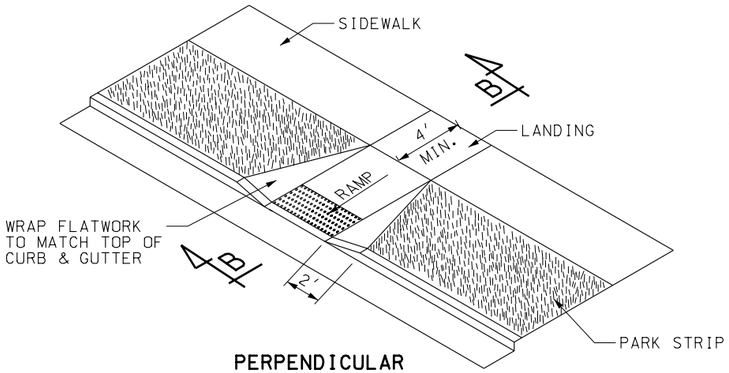
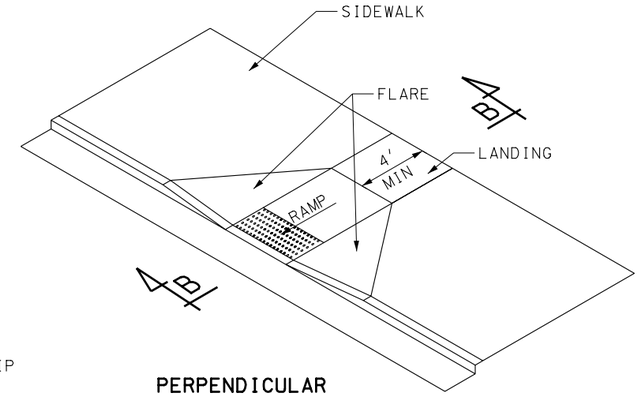
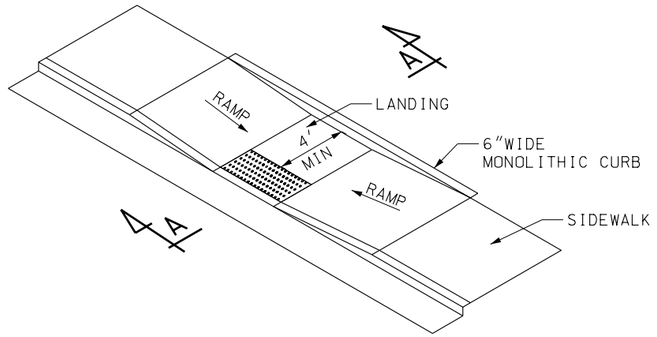


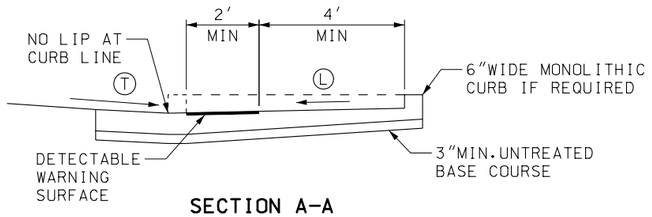
PERPENDICULAR PEDESTRIAN RAMP



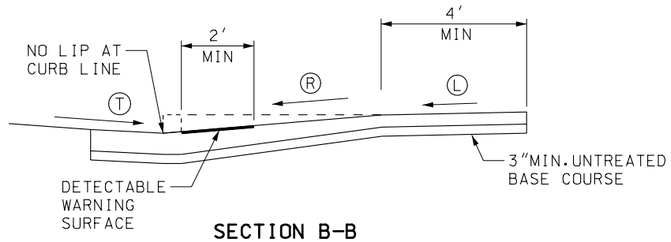
PERPENDICULAR PEDESTRIAN RAMP



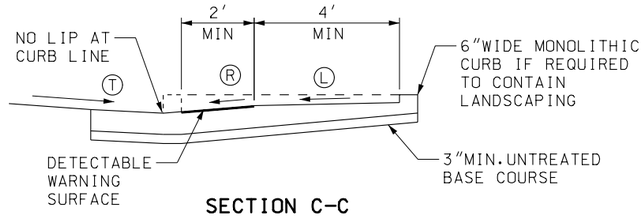
PARALLEL PEDESTRIAN RAMP



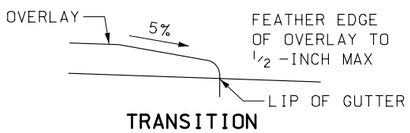
SECTION A–A



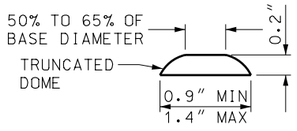
SECTION B–B



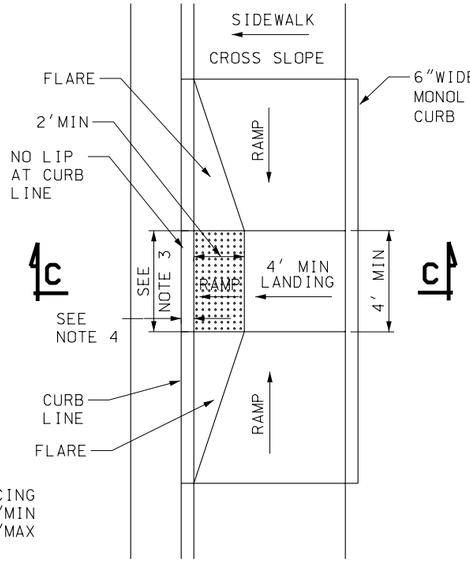
SECTION C–C



TRANSITION DETAIL



DETECTABLE WARNING SURFACE DETAIL A



PEDESTRIAN ACCESS RAMP DETAIL

SLOPE TABLE			
	ITEM	MAX. RUNNING SLOPE *	MAX. CROSS SLOPE *
Ⓛ	LANDING	2% (1V:48H)(b)	2% (1V:48H) (b)
Ⓡ	RAMP	8.33% (1V:12H)(c)	2% (1V:48H) (d)
Ⓣ	TRANSITION	5% (1V:20H)(a)	2% (1V:48H) (d)
	SIDEWALK	--	2% (1V:48H)
	FLARE	10% (1V:10H)	--

* RUNNING SLOPE IS IN THE DIRECTION OF PEDESTRIAN TRAVEL, WHILE CROSS SLOPE IS PERPENDICULAR TO PEDESTRIAN TRAVEL.

(a) TRANSITION RUNNING SLOPE NEEDS TO BE CONSTANT ACROSS ENTIRE CURB CUT. WARP GUTTER PAN TO MEET REQUIRED TRANSITION SLOPE AT CURB CUT.

EXCEPTION:

(b) SLOPE REQUIREMENTS DO NOT APPLY AT MID-BLOCK CROSSINGS.

(c) PARALLEL RAMPS ARE NOT REQUIRED TO EXCEED 15-FEET IN LENGTH.

(d) CROSS SLOPE REQUIREMENT DOES NOT APPLY AT PERPENDICULAR RAMP MID-BLOCK CROSSING.

NOTES:

1. CONFIGURATION OF RAMPS AND LANDINGS MAY BE CHANGED BUT MUST MEET PEDESTRIAN RAMP DIMENSION AND SLOPE REQUIREMENTS. SPECIFIC SITE CONDITIONS WILL VARY. THE USE OF FLARES, CURBWALLS, ETC. ARE AT THE DISCRETION OF THE ENGINEER.
2. PERPENDICULAR AND PARALLEL PEDESTRIAN RAMPS SHOWN ON THIS DRAWING ARE ACCEPTABLE FOR USE AT MID BLOCK OR CORNER INSTALLATIONS. REFER TO STD DWG GW 5B AND GW 5C FOR EXAMPLES OF CORNER INSTALLATIONS.
3. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF RAMP, LANDING, OR CURB CUT. SEE DETAIL A FOR DETECTABLE WARNING SURFACE DIMENSIONS.
4. LOCATE DETECTABLE WARNING SURFACE SO THAT THE EDGE NEAREST THE STREET IS 6" TO 8" FROM THE CURB LINE.
5. PROVIDE DETECTABLE WARNING SURFACE THAT CONTRASTS WITH ADJACENT WALKING SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. ACCEPTABLE COLORS INCLUDE: RED, BLACK, OR YELLOW.
6. USE CLASS AA(AE) CONCRETE.
7. USE UNTREATED BASE COURSE UNDER ALL CONCRETE FLATWORK.

REVISIONS			
NO.	DATE	APPR.	REMARKS
1	06/30/05	L.M.	PERPENDICULAR PEDESTRIAN RAMP DETAIL MODIFIED.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL — JUN.30, 2005 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — JUN.30, 2005 DATE

DEPUTY DIRECTOR

PEDESTRIAN ACCESS

STANDARD DRAWING TITLE

STD DWG GW 5A

DGN File:L:\Standard Drawings\Imperial\2005Working\StandardsCommitteeFiles\June05\gw05A.dgn

13-JUN-2005

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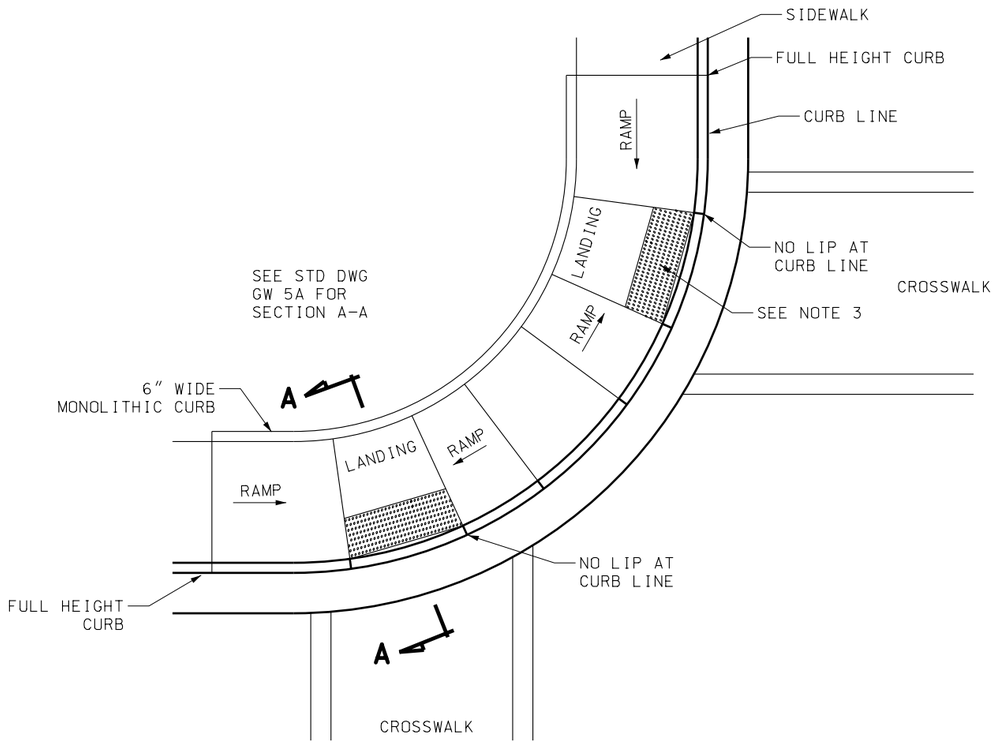
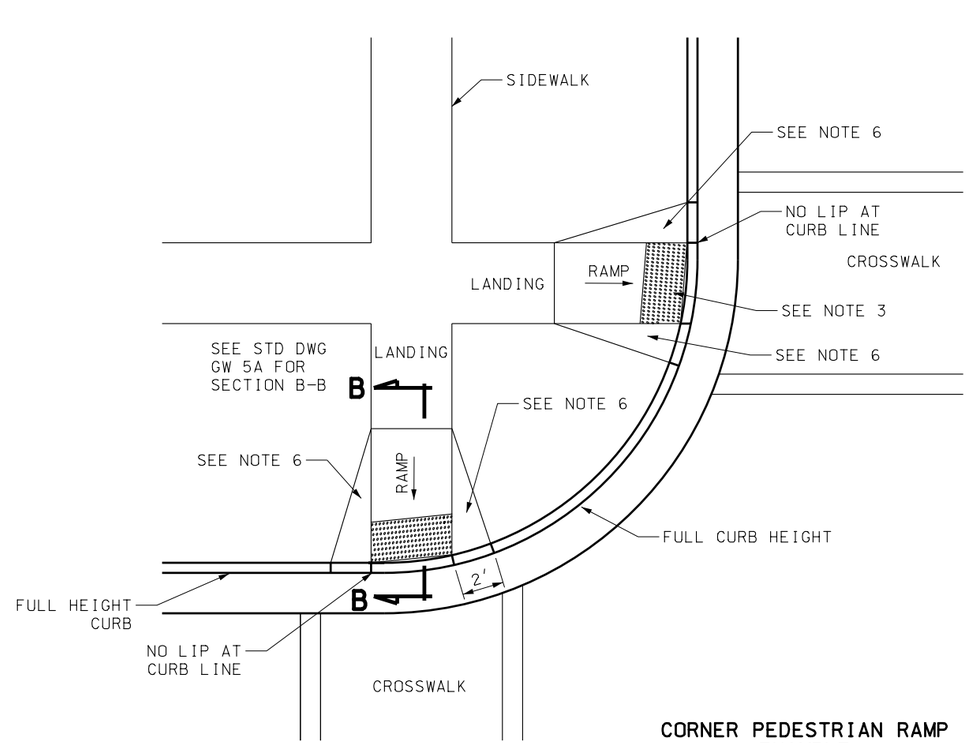
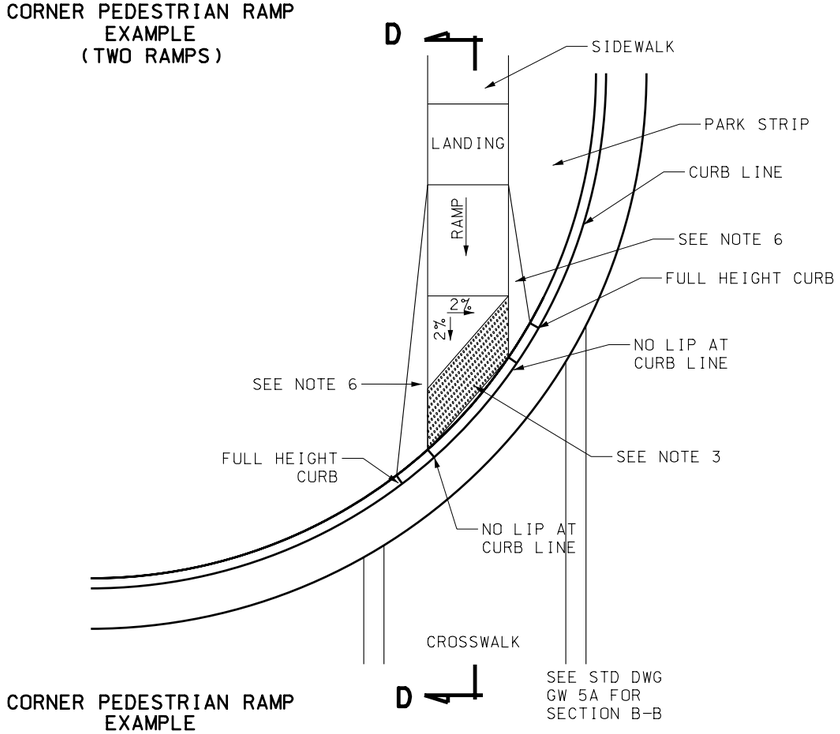


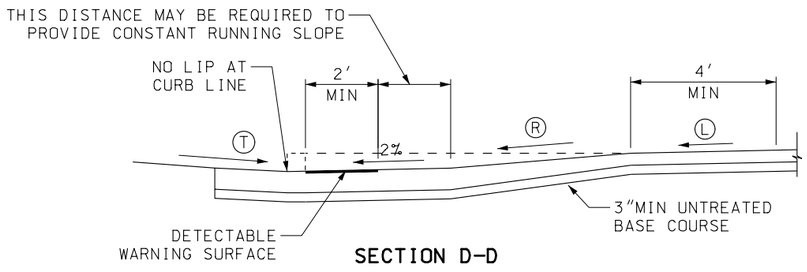
CORNER PEDESTRIAN RAMP
EXAMPLE
(TWO RAMPS)



CORNER PEDESTRIAN RAMP
EXAMPLE
(TWO RAMPS)
FLARE IS ACCEPTABLE IN
LIEU OF FULL HEIGHT CURB
SEE LOCAL AGENCY REQUIREMENTS



CORNER PEDESTRIAN RAMP
EXAMPLE



SECTION D-D

NOTES:

1. REFER TO STD DWG GW 5A FOR PEDESTRIAN ACCESS RAMP DETAIL AND SLOPE REQUIREMENTS.
2. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF RAMP, LANDING, OR CURB CUT. SEE DETAIL A ON STD DWG GW 5A FOR DETECTABLE WARNING SURFACE DIMENSIONS.
3. LOCATE DETECTABLE WARNING SURFACE SO THAT THE EDGE NEAREST THE STREET IS 6" TO 8" FROM THE CURB LINE.
4. WHEN DETECTABLE WARNING SURFACE IS CUT, GRIND REMAINING PORTION OF ANY CUT DOMES. SEAL ALL CUT PANEL EDGES TO PREVENT WATER DAMAGE.
5. LOCATE CURB CUT WITHIN CROSSWALK.
6. WARP FLATWORK TO MATCH TOP OF CURB AND SIDEWALK.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	L.M.	CORNER PEDESTRIAN RAMP EXAMPLE DETAIL MODIFIED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL — JUN.30.2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JUN.30.2005 DATE
DEPUTY DIRECTOR

PEDESTRIAN ACCESS
STANDARD DRAWING TITLE

STD DWG
GW 5B

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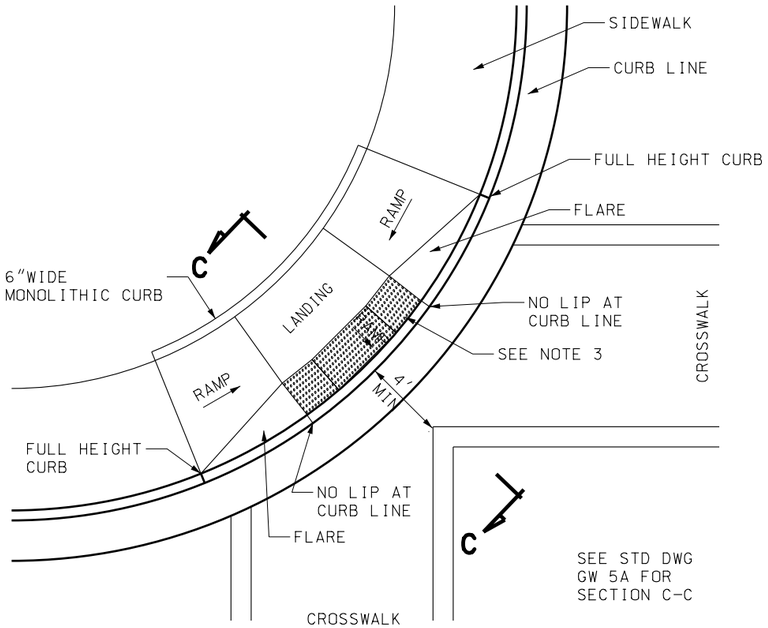
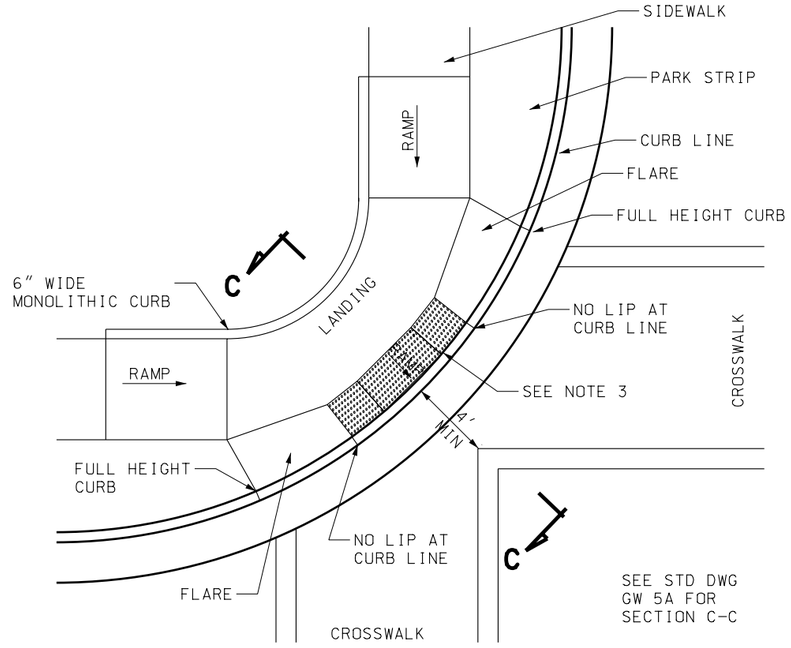
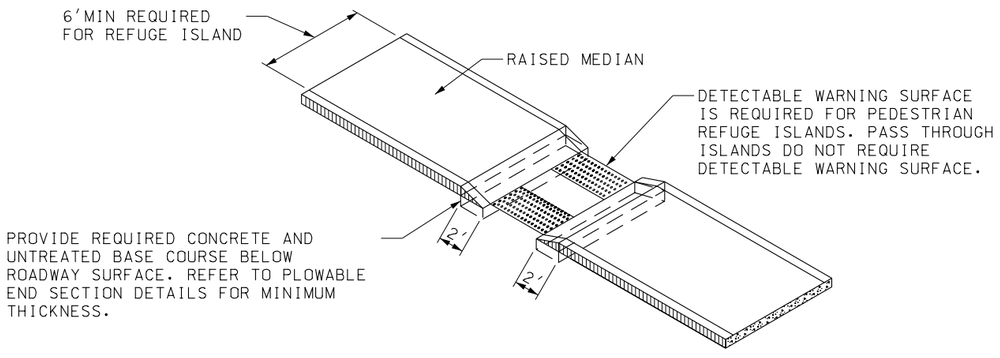


CORNER PEDESTRIAN RAMP
EXAMPLE



CORNER PEDESTRIAN RAMP
EXAMPLE



MEDIAN BREAK
EXAMPLE

NOTES:

1. REFER TO STD DWG GW 5A FOR PEDESTRIAN ACCESS RAMP DETAIL AND SLOPE REQUIREMENTS.
2. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF RAMP, LANDING, OR CURB CUT. SEE DETAIL A ON STD DWG GW 5A FOR DETECTABLE WARNING SURFACE DIMENSIONS.
3. LOCATE DETECTABLE WARNING SURFACE SO THAT THE EDGE NEAREST THE STREET IS 6" TO 8" FROM THE CURB LINE.
4. WHEN DETECTABLE WARNING SURFACE IS CUT, GRIND REMAINING PORTION OF ANY CUT DOMES. SEAL ALL CUT PANEL EDGES TO PREVENT WATER DAMAGE.
5. LOCATE CURB CUT WITHIN CROSSWALK.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	L.M.	MEDIAN BREAK EXAMPLE MODIFIED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH 2005

RECOMMENDED FOR APPROVAL — JUN.30.2005 DATE
CHAIRMAN STANDARDS COMMITTEE — JUN.30.2005 DATE
APPROVED
DEPUTY DIRECTOR

PEDESTRIAN ACCESS

STANDARD DRAWING TITLE

STD DWG
GW 5C

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Standards Committee Submittal Sheet

Name of preparer: Cameron Petersen
Title/Position of preparer: Engr Mgr 1_ Asphalt Engineer
Specification/Drawing/Item Title: Bituminous Material
Specification/Drawing Number: 02745

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

- Formatting changes (uniform superscript notations)
- Amend table 10 (LMCRS-2). To reflect version used as current special provision. The saybolt viscosity was increase in response to R-4 customers concerns with application run-off. Changes were made only after consulting with Koch and Peak Asphalt.
- Re-introduced a Type A rejuvenator specification, table 17. Present tables cover Type B, B-Modified, Type C, and Type D. Will provide customers additional rejuvenation/sealer choices. Type A fills a void between a full-blown rejuvenator (type A) and a surface sealer (type C). Differences between the various rejuvenating agents are covered in a Materials Division Technical Bulletin.
- Introduces a new emulsion, HFMS-2SP. (High-Float, Medium Setting, polymerized asphalt emulsion. Provides another choice for cold-recycle of bituminous pavements. Introduced as the request of Region 4.
- Other minor changes clarify testing requirements.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Existing

C. Stakeholder Notification for AGC and ACEC: **Sent E-mail 5/9/05**

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.) **NONE**

ACEC Comments: (Use as much space as necessary.) **NONE**

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Addressed proposed standards revision of 02745 in the monthly UDOT Paving Council Meeting held 5/11/05. The meeting is open to all consultants, contractors, asphalt binder suppliers, region Materials Engineers, pavement managers, etc. Requested comments by 5/25/05. NO COMMENTS RECEIVED

Contractors (Any additional contacts beyond "C" above.)
Addressed in 5/11/05 Paving Council Meeting. No Comments Received

Suppliers **Addressed in 5/11/05 UDOT Paving Council Meeting. No Comments**

Consultants (as required) (Any additional contacts beyond "C" above.)

Addressed in 5/11/05 UDOT Paving Council Meeting. No Comments

Others (as appropriate) **None**

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

Changes will not affect Minimum Sampling and Testing Guide.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price. **Not Impacted**

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

Not Impacted

3. Life cycle cost. **Not Applicable**

F. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Chip-seal crews will benefit from not having the freshly applied LMCRS-2 emulsion run off or puddle on the pavement surface.

Pavement managers will benefit by having two new emulsions to choose from. (Type A, and HFMS-2SP.) The selection and use of rejuvenators (type A, B, B-mod, C, and D) are addressed in a Technical Bulletin. Hot-mix recycling contractors prefer specific emulsions such as HFMS-2SP in lieu of CMS-2.

H. Safety Impacts? **None**

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Not Applicable

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

~~DRAFT 5/10/05~~

Supplemental Specification
2005 Standard Specification Book

SECTION 02745

ASPHALT MATERIAL

Delete Section 02745 and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Asphalt materials

1.2 PAYMENT PROCEDURES

A. Price adjustments for asphalt cement and liquid asphalt (chip-seal emulsions and/or cut-backs):
   1. Standard department procedures governs price adjustments made where asphalt material does not conform to the specifications
      a. If the price adjustment exceeds 30 percent, the Engineer may order the removal of any or all the defective asphalt material.
      b. The pay factor for such material is 0.50 when allowed to remain in place.

B. Price adjustments for Performance Graded Asphalt Binder (PGAB):
   1. Standard department PGAB management plan governs price reductions or removal of material where the binder does not conform to the specifications.

1.3 REFERENCES

A. AASHTO M 81: Cut-Back Asphalt (Rapid-Curing Type)

B. AASHTO M 82: Cut-Back Asphalt (Medium-Curing Type)

C. AASHTO M 140: Emulsified Asphalt

D. AASHTO M 208: Cationic Emulsified Asphalt

E. AASHTO M 226: Viscosity Graded Asphalt Cement

F. AASHTO M 320: Performance Graded Asphalt Cement

G. AASHTO R 28: Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)

H. AASHTO T 44: Solubility of Bituminous Materials

I. AASHTO T 48: Flash and Fire Points by Cleveland Open Cup

J. ASHTO T 49: Penetration of Bituminous Materials

K. AASHTO T 50: Float Test for Bituminous Materials

L. AASHTO T 51: Ductility of Bituminous Materials

M. AASHTO T 59: Testing Emulsified Asphalt

N. AASHTO T 201: Kinematic Viscosity of Asphalts

O. AASHTO T 228: Specific Gravity of Semi-Solid Bituminous Materials

P. AASHTO T 240: Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)

Q. AASHTO T 300: Force Ductility of Bituminous Materials

R. AASHTO T 301: Elastic Recovery Test of Bituminous Materials by Means of a Ductilometer

S. AASHTO T 313: Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)

T. AASHTO T 314: Determining the Fracture Properties of Asphalt Binder in Direct Tension

U. AASHTO T 315: Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

V. AASHTO T 316: Viscosity Determination of Asphalt Binder Using Rotational Viscometer

W. ASTM D 92: Flash and Fire Points by Cleveland Open Cup

X. ASTM D 1190: Concrete Joint Sealer, Hot-Applied Elastic Type

Y: ASTM D 2006: -Method of Test for Characteristic Groups in Rubber Extender and Processing Oils by the Precipitation Method.

~~Y~~Z. ASTM D 2007: Characteristic Groups in Rubber Extender and Processing Oils and Other Petroleum-Derived Oils by the Clay-Gel Absorption Chromatographic Method

~~Z~~AA. ASTM D 2026: Cutback Asphalt (Slow-Curing Type)

~~AA~~BB. ASTM D 3405: Joint Sealants, Hot-Applied, for Concrete and Asphalt Pavements

~~BB~~CC. ASTM D 4402: Viscosity Determinations of Unfilled Asphalts Using the Brookfield Thermosel Apparatus

~~CC~~DD. ASTM D 5329: Sealants and Fillers, Hot-Applied, For Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements

~~DD~~EE. ASTM D 5801: Toughness and Tenacity of Bituminous Materials

~~EE~~FF. California Test Methods ~~CA 332: California Test Method for Torsional Recovery of Modified Aspahlt Residue.~~

~~FF~~GG. UDOT Materials Manual of Instruction ~~UDOT Materials Manual Part 8, Section 967: Cold Bend Flexibility.~~

~~GG~~HH. UDOT Minimum Sampling and Testing Guide

~~, Section 508: Asphalt Emulsion Quality Management Plan.~~

~~HH:HH. UDOT Minimum Sampling and Testing Guide, Section 509: Asphalt Binder Quality Management Plan~~ UDOT Asphalt Binder Quality Management Plan

1.4 SUBMITTALS

A. For each shipment of material, supply a vendor-prepared bill of lading showing the following information:

1. Type and grade of material
2. Type and amount of additives, used, if applicable
3. Destination
4. Consignee's name
5. Date of Shipment
6. Railroad car or truck identification
7. Project number
8. Loading temperature
9. Net weight in tons (or net gallons corrected to 60 degrees F, when requested)
10. Specific gravity
11. Bill of lading number
12. Manufacturer of asphalt material

1.5 DELIVERY, STORAGE, AND HANDLING

A. Each shipment of asphalt material must:
   1. Be uniform in appearance and consistency.
   2. Show no foaming when heated to the specified loading temperature.

B. Do not supply shipments contaminated with other asphalt types or grades than those specified.

1.6 GRADE OF MATERIAL

A. The Engineer determines the grade of material to be used based on the supply source designated by the Contractor when the bid proposal lists more than one grade of asphalt material.

PART 2 PRODUCTS

2.1 PERFORMANCE GRADED ASPHALT BINDER (PGAB)

A. Supply PGABs under the Approved Supplier Certification (ASC) System. Refer to the UDOT Minimum Sampling and Testing Guide, Section 509, Asphalt Binder Management Plan.

B. As specified in AASHTO M 320 for all PGABs having algebraic differences less than 92 degrees between the high and low design temperatures.

C. As specified in Tables 1, 2, 3, 4, 5, 6, 7, and 8 for all PGABs having algebraic differences equal to or greater than 92 degrees between the high and

low design temperatures.

Table 1

PG58-34		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@58°C, G*, kPa	1.30 Min.
	@58°C, phase angle, degrees	74.0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@58°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	65 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@16°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-24°C, S, MPa	300 Max.
	@-24°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-24°C, Failure Strain, %	1.5 Min.
	@-24°C, Failure Stress[2] (b), MPa	4.0 Min.

~~1~~ **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

~~2~~ **(b) No allowances will be given for passing at a colder grade**

Table 2

PG64-28		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@64°C, G*, kPa	1.30 Min.
	@64°C, phase angle, degrees	74.0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@64°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	65 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@ 22°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-18°C, S, MPa	300 Max.
	@-18°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-18°C, Failure Strain, %	1.5 Min.
	@-18°C, FailureStress[2] (b), Mpa	4.0 Min.

~~1~~ **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

~~2~~ **(b) No allowances will be given for passing at a colder grade**

Table 3

PG64-34		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@64°C, G*, kPa	1.30 Min.
	@64°C, phase angle, degrees	71.0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T-240		
Dynamic Shear Rheometer, AASHTO T 315	@64°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	70 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@19°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-24°C, S, MPa	300 Max.
	@-24°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-24°C, Failure Strain, %	1.5 Min.
	@-24°C, FailureStress[2](b), MPa	4.0 Min.

[1] **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

[2] **(b) No allowances will be given for passing at a colder grade**

Table 4

PG70-22		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@70°C, G*, kPa	1.30 Min.
	@70°C, phase angle, degrees	74.0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@70°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	65 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@28°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-12°C, S, MPa	300 Max.
	@-12°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-12°C, Failure Strain, %	1.5 Min.
	@-12°C, FailureStress[2](b), MPa	4.0 Min.

[1] **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

[2] **(b) No allowances will be given for passing at a colder grade**

Table 5

PG70-28		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@70°C, G*, kPa	1.30 Min.
	@70°C, phase angle, degrees	71.0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@70°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	70 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@25°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-18°C, S, MPa	300 Max.
	@-18°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-18°C, Failure Strain, %	1.5 Min.
	@-18°C, FailureStress[2] (b), MPa	4.0 Min.

[1] **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

[2] **(b) No allowances will be given for passing at a colder grade**

Table 6

PG70-34		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@70°C, G*, kPa	1.30 Min.
	@70°C, phase angle, degrees	71.0 Max.
Rotational Viscometer, AASHTO T 316	@135 °C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@70°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	75 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@22°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-24°C, S, MPa	300 Max.
	@-24°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-24°C, Failure Strain, %	1.5 Min.
	@-24°C, FailureStress[2] (b), MPa	4.0 Min.

[1] **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

[2] **(b) No allowances will be given for passing at a colder grade**

Table 7

PG76-22		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@76°C, G*, kPa	1.30 Min.
	@76°C, phase angle, degrees	71.0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@76°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	70 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@ 31°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-12°C, S, MPa	300 Max.
	@-12°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-12°C, Failure Strain, %	1.5 Min.
	@-12°C, FailureStress[2] (b), MPa	4.0 Min.

~~1~~ **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

~~2~~ **(b) No allowances will be given for passing at a colder grade**

Table 8

PG76-28		
Original Binder		
Dynamic Shear Rheometer, AASHTO T 315	@76°C, G*, kPa	1.30 Min.
	@76°C, phase angle, degrees	71. 0 Max.
Rotational Viscometer, AASHTO T 316	@135°C, Pa.s	3 Max.
Flash Point, AASHTO T 48	°C	260 Min.
RTFO Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@76°C, G*/sinδ, kPa	2.20 Min.
Elastic Recovery, AASHTO T 301 mod[1] (a)	%	75 Min.
PAV Residue, 20 hours, 2.10 Mpa, 100 °C, AASHTO R 28		
Dynamic Shear Rheometer, AASHTO T 315	@28°C, kPa	5000 Max.
Bending Beam Rheometer, AASHTO T 313	@-18°C, S, MPa	300 Max.
	@-18°C, m-value	0.300 Min.
Direct Tension Test, AASHTO T 314	@-18°C, Failure Strain, %	1.5 Min.
	@-18°C, FailureStress[2] (b), MPa	4.0 Min.

~~1~~ **(a) Modify paragraph 4.5 as follows: After 20 cm has been reached, stop the ductilometer and within 2 seconds, sever the specimen at its center with a pair of scissor…**

~~2~~ **(b) No allowances will be given for passing at a colder grade**

2.2 ASPHALTIC CEMENT, LIQUID ASPHALTS, REJUVENATING AGENTS

A. As specified in AASHTO M 226, Table 2 with the following modifications:
   1. Delete and replace ductility at 77EF (25EC) with ductility at 39.2EF (4EC) with values as detailed below.

AC - 2.5	AC - 5	AC - 10	AC - 20
50+	25+	15+	5+

B. As specified for cationic and anionic emulsified asphalt.
   1. All standard Slow Setting (SS, CSS), Medium Setting (MS, CMS), and Rapid Setting (RS, CRS) grades; inclusive of all High-Float designations (HF).
   2. Supply under the Approved Supplier Certification System (ASC).
   3. Meet AASHTO M 208 and M 140.

C. Conform to the requirements of one of these tables:
   1. Table 9: Cationic Rapid Setting Emulsified Polymerized Asphalt (CRS-2P)
   2. Table 10: Latex Modified Cationic Rapid Setting Emulsified Asphalt (LMCRS-2)
   3. Table 11: Cationic Medium Setting Emulsified Asphalt (CMS-2S)
   4. Table 12: High Float Medium Setting Emulsified Asphalt (HFMS-2)
   5. Table 13: High Float Medium Setting Emulsified Polymerized Asphalt (HFMS-2P)
   6. Table 14: High Float ~~Rapid~~ Medium Setting Emulsified Polymerized Asphalt ~~(HFRS-2P)~~(HFMS-2SP)
   7. Table 15: ~~Cationic Rapid Setting Emulsified Asphalt (CRS-2A, B)~~High Float Rapid Setting Emulsified Polymerized Asphalt (HFRS-2P).
   8. Table 16: Setting Cationic Rapid Emulsified Asphalt (CRS-2A, B)

D. Curing cut-back asphalt:
   1. As specified for slow curing (SC) in ASTM D 2026.
   2. As specified for medium curing (MC) in AASHTO M 82.
   3. As specified for rapid curing (RC) in AASHTO M 81.

E. Conform to requirements for Emulsified Asphalt Pavement Rejuvenating Agent:
   1. Table 1~~6~~7: Type ~~B~~A
   2. Table 1~~7~~8: Type B ~~Modified~~
   3. Table 1~~8~~9: Type ~~C~~B Modified
   4. Table 1~~9~~20: Type ~~D~~ C
   5. Table 21: Type D

–Table 9

Cationic Rapid Setting Emulsified Polymerized Asphalt (CRS-2P)			
Tests	**AASHTO Test Method**	**Min.**	**Max.**
Emulsion			
Viscosity , SF, 140EF (60EC), s (Project-site Acceptance/Rejection Limits)	T59	100	400
Settlement (a) 5 days, percent	T 59		5
Storage Stability Test (b) 1 d, 24 h, percent	T 59		
Demulsibility (c) 35 ml, 0.8% sodium dioctyl Sulfosucinate, percent	T 59	40	
Particle Charge Test	T 59	Positive	
Sieve Test, percent	T 59		0.10
Distillation			
Oil distillate, by volume of emulsion, percent			0
Residue (d), percent		68	
Residue from Distillation Test			
Penetration, 77EF(25EC), 100 g, 5 s, dmm	T 49	80	150
Ductility, 39.2EF(4EC), 5 cm/min, cm Toughness, lb-in Tenacity, lb-in	T 51 ASTM D 5801 ASTM D 5801	35 75 50	
Solubility in trichloroethylene, percent	T 44	97.5	

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than a five-day time; or the purchaser may require that the settlement test be run from the time the sample is received until it is used, if the elapsed time is less than 5 days.

(b) The 24-hour (1-day) storage stability test may be used instead of the five-day settlement test.

(c) The demulsibility test is made within 30 days from date of shipment.

(d) Distillation is determined by AASHTO T 59, with modifications to include a 350 ± 5EF (177±3°C) maximum temperature to be held for 15 minutes.

Modify the asphalt cement prior to emulsification.

-Table 10

Latex Modified Cationic Rapid Setting Emulsified Asphalt (LMCRS-2)			
Tests	**AASHTO Test Method**	**Min.**	**Max.**
Emulsion			
Viscosity, SF, 122EF (50EC), s (Project Site Acceptance/Rejection Limits)	T59	~~75~~140	~~300~~400
Settlement (a) 5 days, percent	T 59		5
Storage Stability Test (b) 1 d, 24 h, percent	T 59		1
Demulsibility (c) 35 ml, 0.8% sodium dioctyl Sulfosucinate, percent	T 59	40	
Particle Charge Test	T 59	Positive	
Sieve Test, percent	T 59		0.3
Distillation			
Oil distillate, by volume of emulsion, percent			0
Residue (d), percent		65	
Residue from Distillation Test			
Penetration, 77EF (25EC), 100 g, 5 s, dmm	T 49	40	200
Torsional Recovery (e)		18	

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than a five-day time; or the purchaser may require that the settlement test be run from the time the sample is received until it is used, if the elapsed time is less than 5 days.

(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.

(c) Make the demulsibility test within 30 days from date of shipment.

(d) Determine distillation by AASHTO T 59,with modifications to include a 350 ± 5EF (177±3EC) maximum temperature to be held for 15 minutes.

(e) CA 332 (California Test Method)

Co-mill latex and asphalt during emulsification

Table 11

Cationic Medium Setting Emulsified Asphalt (CMS-2S)		
Tests	**AASHTO Test Method**	**Specification**
Emulsion		
Viscosity, SF, 122EF (50EC), s	T 59	50 - 450
Percent residue	T 59	60 min
~~One-day storage stability, percent~~ Storage Stability Test, 1d, 24h, percent	T 59	1 max
Sieve, percent	T 59	0.10 max
Particle charge	T 59	Positive
Oil Distillate, percent by volume of emulsion	T 59	5-15
Residue		
Penetration, 77EF (25EC), 100g, 5 sec, dmm	T 59	100-250
Solubility, percent	T 59	97.5 min.

Table 12

High Float Medium Setting Emulsified Asphalt (HFMS-2)			
Tests	**AASHTO Test Method**	**Min.**	**Max.**
Emulsion			
Viscosity, SF, 122°F (50°C), s (Project Site Acceptance/Rejection Limits	T59	70	300
Storage Stability Test, 1d, 24 h, percent	T59		1.0
Sieve Test , percent	T59		0.1
Distillation	T59		
Oil Distillate, by volume of emulsion, percent	T59	NA	NA
Residue, percent	T59	65	
Residue from Distillation Test			
Penetration, 77°F (25°C), 100g, 5 s, dmm	T49	50	200
Float Test, 140°F (60°C), s	T50	1200	
Solubility in Trichloroethylene, percent	T44	97.5	
Ductility, 77°F (25°C) 5cm/min, cm	T51	40	

–Table 13

High Float Medium Setting Emulsified Polymerized Asphalt (HFMS-2P) (a)			
Tests	**AASHTO Test method**	**Min.**	**Max.**
Emulsion			
Viscosity, SF, 122EF (50EC), s (Project Site Acceptance/Rejection Limits)	T 59	100	450
Storage Stability Test ~~(a)~~ 1 d, 24 h, percent	T 59		~~0.1~~1.0
Sieve Test, percent	T 59		0.1
Distillation			
Oil distillate, by volume of emulsion, percent	T 59	~~1~~	7
Residue (~~e~~b), percent	T 59	65	
Residue from Distillation Test			
Penetration, 77EF (25EC), 100 g, 5 s, dmm	T 49	70	300
Float Test, 140EF (60EC), s	T 50	1200	300
Solubility in trichloroethylene, percent	T 44	97.5	
Elastic Recovery, 77EF (25EC), percent	T 301	50	

(a) Supply an HFMS-2P (anionic, polymerized, high-float) as an emulsified blend of polymerized asphalt cement, water, and emulsifiers. Polymerize the asphalt cement with a minimum of 3.0% polymer by weight of the asphalt cement prior to emulsification. After standing undisturbed for a minimum of 24 hours, the emulsion shall be smooth and homogeneous throughout with no white, milky separation, pumpable, and suitable for application through a distributor.

~~(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.~~

(~~e~~b) Determine the distillation by AASHTO T 59, with modifications to include a 350± 5EF (177±3EC) maximum temperature to be held for 15 minutes.

Table 14

High Float Medium Setting Emulsified Polymerized Asphalt (HFMS-2SP) (a)			
Tests	**AASHTO Test method**	**Min.**	**Max.**
Emulsion			
Viscosity, SF, 122EF (50EC), s (Project Site Acceptance/Rejection Limits)	T 59	50	450
Storage Stability Test ~~(a)~~ 1 d, 24 h, percent	T 59		0.1
Sieve Test, percent	T 59		0.1
Distillation			
Oil distillate, by volume of emulsion, percent	T 59	1	7
Residue (~~c~~b), percent	T 59	65	
Residue from Distillation Test			
Penetration, 77EF (25EC), 100 g, 5 s, dmm	T 49	150	300(c)
Float Test, 140EF (60EC), s	T 50	1200	
Solubility in trichloroethylene, percent	T 44	97.5	
Elastic Recovery(d), 77EF (25EC), percent	T 301	50	

(a) Supply an HFMS-2SP (anionic, polymerized, high-float) as an emulsified blend of polymerized asphalt cement, water, and emulsifiers. Polymerize the asphalt cement with a minimum of 3.0% polymer by weight of the asphalt cement prior to emulsification. After standing undisturbed for a minimum of 24 hours, the emulsion shall be smooth and homogeneous throughout with no white, milky separation, pumpable, and suitable for application through a distributor.

~~(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.~~

(~~a~~b) Determine the distillation by AASHTO T 59, with modifications to include a 350± 5EF (177±3EC) maximum temperature to be held for 15 minutes.

(c) When approved by the Engineer, Emulsified Asphalt (HFMS-2SP) with a residual penetration greater than 300 dmm may be used with Cold Bituminous Pavement (Recycle) to address problems with cool weather or extremely aged existing pavement.

(d) Report only when penetration is greater than 300 dmm.

Table ~~14~~15

High Float Rapid Setting Emulsified Polymerized Asphalt (HFRS-2P) (a)			
Tests	**AASHTO Test method**	**Min.**	**Max.**
Emulsion			
Viscosity, SF @ 122EF (50EC), s (Project Site Acceptance/Rejection Limits)	T 59	50	450
Storage Stability Test (b) 1 d, 24 h, percent	T 59		1
Demulsibility 0.02 N Ca Cl_2, percent	T 59	40	
Sieve Test, percent	T 59		0.1
Distillation			
Oil distillate, by volume of emulsion, percent	T 59		3
Residue (~~c~~b), percent	T 59	65	
Residue from Distillation Test			
Penetration, 77°F (25EC), 100 g, 5 s, dmm	T 49	70	150
Float Test, 140EF (60EC), s	T 50	1200	
Solubility in trichloroethylene, percent	T 44	97.5	
Elastic Recovery, 77EF (25EC), percent	T 301	58	

(a) Supply an HFMS-2SP (anionic, polymerized, high-float) as an emulsified blend of polymerized asphalt cement, water, and emulsifiers. Polymerize the asphalt cement with a minimum of 3.0% polymer by weight of the asphalt cement prior to emulsification. After standing undisturbed for a minimum of 24 hours, the emulsion shall be smooth and homogeneous throughout with no white, milky separation, pumpable, and suitable for application through a distributor.

~~(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.~~

(~~c~~b) Determine the distillation by AASHTO T 59, with modifications to include a 350 ± 5EF (177±3EC) maximum temperature to be held for 15 minutes.

Table ~~15~~16

Cationic Rapid Setting Emulsified Asphalt (CRS-2A,B)			
Tests	**AASHTO Test Method**	**Min**	**Max**
Emulsion			
Viscosity, SF, 122EF (50EC), s (Project Site Rejection/Acceptance Limits)	T 59	140	400
Storage stability test, 24 h, percent	T 59		1
Demulsibility, 35 mL 0.8 percent Sodium Dioctyl Sulfosucinate, percent	T 59	40	
Particle charge test	T 59	Positive	
Sieve test, percent	T 59		0.10
Distillation			
Oil distillate, by volume of emulsion, percent	T 59		0
Residue, percent	T 59	65	
Use PG58-22 and PG64-22 as base asphalt cement for CRS-2A, B, respectively. Specification for high temperature performance: original and RTFO G*/sin**δ** within 3EC of grade.			

Table 17

Emulsified Type A Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SF, 77EF (25EC), s	AASHTO T 59	15 Min 40 Max
Residue , percent W (a)	AASHTO T 59	60 Min. 65 Max.
Miscibility Test (b)	AASHTO T-59	No Coagulation
Sieve Test, percent W (c)	AASHTO T 59	0.20 Max.
5-day Settlement, percent W	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
Light Transmittance , %	UDOT MOI 8-973	30 Max.
Cement Mixing	AASHTO T-59	2 Max.
Residue from Distillation (a)		
Viscosity, 140 ºF (60EC), mm^2/s	ASTM D 4402	150 - 300
Flash Point, COC, EF (EC)	AASHTO T 48	385 Min.
Asphaltenes, percent W	ASTM D 2006-70	0.4 Min. 0.75 Max.
Maltene Distribution Ratio $(PC + A_1)/(S + A_2)$ (d)	ASTM D 2006-70	0.3 Min. 0.6 Max
Saturated Hydrocarbons, S (d)	ASTM D 2006-70	21 Min. 28 Max.
PC/S Ratio (d)	ASTM D 2006-70	1.5 Min.

(a) AASHTO T 59 , Evaporation Test, modified as follows: Heat a 50 gram sample to 300 ºF until foaming ceases, then cool immediately and calculate results.

(b) AASHTO T 59, modified as follows: use a 0.02 Normal Calcium Chloride solution in place of distilled water.

(c) AASHTO T 59, modified as follows: use distilled water in place of a two percent sodium oleate solution.

(d) Chemical composition by ASTM Method D-2006-70:
PC= Polar Compounds, A_1 = First Acidaffins
A_2 = Second Acidaffins, S = Saturated Hydrocarbons

Table ~~16~~18

Emulsified Type B Asphalt Pavement Rejuvenating Agent Concentrate		
Tests	**Test Method**	**Limits**
Viscosity, SF, 77EF (25EC), s	AASHTO T 59	25-150
Residue, percent W	AASHTO T 59 (mod) (a)	62 Min.
Sieve Test, percent W	AASHTO T 59	0.10 Max.
5-day Settlement	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
Pumping Stability (b)		Pass
Residue from Distillation (a)		
Viscosity @ 140°F (60°C), mm^2/s	AASHTO T 201	2500-7500
Solubility in 1,1,1 Trichloroethylene, percent	AASHTO T 44	98 Min.
Flash Point, COC	ASTM D 92	204EC, Min.
Asphaltenes, percent W	ASTM D 2007	15 Max.
Saturates, percent W	ASTM D 2007	30 Max.
Aromatics, percent W	ASTM D 2007	25 Min.
Polar Compounds, percent W	ASTM D 2007	25 Min.
(a) Determine the distillation by AASHTO T 59 with modifications to include a 300 ±5EF (149±3EC) maximum temperature to be held for 15 minutes.		
(b) Test pumping stability by pumping 475 ml of Type B diluted 1 part concentrate to 1 part water, at 77EF (25°C) through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes with no significant separation or coagulation in pumped material.		
Type B: an emulsified blend of, lube oil and/or lube oil extract, and petroleum asphalt.		

Table ~~17~~19

Emulsified Type B Modified Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SF, 77EF (25EC), s	AASHTO T 59	50-200
Residue(a) ~~by distillation or Evaporation (a)~~, percent W	AASHTO T 59	62 Min.
Sieve Test, percent W	AASHTO T 59	0.20 Max.
5-day Settlement, percent W	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
Pumping Stability (b)		Pass
Residue from Distillation (a)		
Viscosity (c) 275EF (135EC), cP	ASTM D 4402	150 - 300
Penetration, 77EF (25EC), dmm	AASHTO T 49	180 Min.
Solubility in 1,1,1 Trichloroethylene, percent	AASHTO T 44	98 Min.
Flash Point, COC, EF (EC)	AASHTO T 48	400(204) Min.
Asphaltenes, percent W	ASTM D 2007	20-40
Saturates, percent % W	ASTM D 2007	20 Max.
Polar Compounds, percent W	ASTM D 2007	25 Min.
Aromatics, percent W	ASTM D 2007	20 Min.
PC/S Ratio	ASTM D 2007	1.5 Min.

(a) Determine the distillation by AASHTO T 59 with modifications to include a 300±5EF (149± 3°C) maximum temperature to be held for 15 minutes.

(b) Pumping stability is tested by pumping 475 ml of Type B diluted 1 part concentrate to 1 part water, at 77EF (25EC) through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes with no significant separation or coagulation in pumped material.

(c) Brookfield Thermocel Apparatus-LV model. ≥ 50 rpm with a #21 spindle, 7.1 g residue, at > 10 torque

As required by the Asphalt Emulsion Quality Management Plan, UDOT Minimum Sampling and Testing Guide, Section 508) the supplier certifies that the base stock contains a minimum of 15% by weight of Gilsonite Ore. Use the HCL precipitation method as a qualitative test to detect the presence of Gilsonite.

Table ~~18~~20

Emulsified Type C Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SF, 77EF (25EC), s	AASHTO T 59	10-100
Residue (a), percent W (Type C supplied ready to use 1:1 or 2:1.	AASHTO T 59 ~~(a)~~	30 Min. 1:1 40 Min. 2:1
Sieve Test, percent W (b)		0.10 Max.
5-day Settlement, percent W	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
pH (May be used if particle charge test is inconclusive)		2.0 - 7.0
Pumping Stability (c)		Pass
Tests of Residue from Distillation (a)		
Viscosity, 275EF (135°C), mm^2/s	AASHTO T 201	475-1500
Solubility in 1,1,1 Trichloroethylene, percent	AASHTO T 44	97.5 Min.
RTFO mass loss, percent W	AASHTO T 240	2.5 Max.
Specific Gravity	AASHTO T 228	0.98 Min.
Flash Point, COC	AASHTO T 48	232 EC, Min.
Asphaltenes, percent W	ASTM D 2007	25 Min., 45 Max.
Saturates, percent W	ASTM D 2007	10 Max.
Polar Compounds, percent W	ASTM D 2007	30 Min.
Aromatics, percent W	ASTM D 2007	15 Min.

(a) Determine the distillation by AASHTO T 59 with modifications to include a 300± 5EF (149 ± 3EC) maximum temperature to be held for 15 minutes.

(b) Test method identical to AASHTO T 59 except that distilled water is used in place of 2 % sodium oleate solution.

(c) Test pumping stability by pumping 475 ml of Type diluted 1 part concentrate to 1 part water, at 77EF (25EC) through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes with no significant separation or coagulation in pumped material.

As required by the Asphalt Emulsion Quality Management Plan, UDOT Minimum Sampling and Testing Guide, Section 508), the supplier certifies that the base stock contains a minimum of 10% by weight of Gilsonite ore. Use the HCL precipitation method as a qualitative test to detect the presence of Gilsonite.

Table ~~19~~21

Emulsified Type D Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SF, 77EF (25EC), s	AASHTO T 59	30-90
Residue, (~~a~~c b) percent W	AASHTO T 59 ~~(mod) (a)~~	65
Sieve Test, percent W	AASHTO T 59	0.10 Max.
pH		2.0 - 5.0
Residue from Distillation (~~c~~ b)		
Viscosity, 140EF (60EC), cm^2/s	AASHTO T 201	300-1200
Viscosity, 275EF (135EC), mm^2/s	AASHTO T 201	300 Min.
Modified Torsional Recovery~~(a),~~ (~~b~~ a) percent	CA 332 (Mod)	40 ~~%~~ Min.
Toughness, 77EF (25EC), in-lb	ASTM D 5801	8 Min.
Tenacity, 77EF (25EC), in-lb	ASTM D 5801	5.3 Min.
Asphaltenes, percent W	ASTM D 2007	16 Max.
Saturates, percent W	ASTM D 2007	20 Max.

~~(a) California test method #331 for recovery of residue.~~
(~~b~~ a) Torsional recovery measurement to include first 30 seconds.
(~~c~~ b) Determine the distillation by AASHTO T 59 with modifications to include a 300±5EF (149±3EC) maximum temperature to be held for 15 minutes.

2.3 HOT-POUR CRACK SEALANT FOR BITUMINOUS CONCRETE

A. Combine a homogenous blend of materials to produce a sealant meeting properties and tests in Table ~~20~~22.

B. Packaging and Marking: Supply sealant pre-blended, pre-reacted, and pre-packaged in lined boxes weighing no more than 30 lb.
   1. Use a dissolvable lining that will completely melt and become part of the sealant upon subsequent re-melting.
   2. Deliver the sealant in the manufacturer's original sealed container. Clearly mark each container with the manufacturer's name, trade name of sealant, batch or lot number, and recommended safe heating and application temperatures.

Table ~~20~~22

Hot-Pour Bituminous Concrete Crack Sealant			
Application Properties:			
Workability:	Pour readily and penetrate 0.25 ~~in~~ inch and wider cracks for the entire application temperature range recommended by the manufacturer.		
Curing:	No tracking caused by normal traffic after 45 minutes from application.		
Asphalt Compatibility: ASTM D 5329, Section 14.	No failure in adhesion. No formation of an oily ooze at the interface between the sealant and the bituminous concrete or softening or other harmful effects on the bituminous concrete.		
Material Handling:	Follow the manufacturer's safe heating and application temperatures.		
Test Method	**Property**	**Minimum**	**Maximum**
AASHTO T 51	Ductility, modified, 1cm/min, 39.2EF (4EC), cm	30	
UDOT method 967	Cold Temperature Flexibility	no cracks	
AASHTO T 300 (a)	Force-Ductility, lb force		4
ASTM D 5329	Flow 140EF (60EC), 5 hrs 75Eangle, mm		3
ASTM D 3405 (b)	Tensile-Adhesion, modified	300%	
AASHTO T 228	Specific Gravity, 60EF (15.6EC)		1.140
ASTM D 5329	Cone Penetration, 77EF (25EC), 150 g, 5 sec., dmm		90
ASTM D 5329	Resilience, 77EF (25EC), 20 sec., percent	30	
ASTM D 4402	Viscosity, 380EF (193.3EC), SC4-27 spindle, 20 rpm, cP		2500
ASTM D 5329	Bond as per ASTM D 1190, Section 6.4		Pass
(a) Maximum of 4 lb force during the specified elongation of 30 cm @ 1 cm/min, 39.2EF (4EC).			
(b) Use ASTM D 3405, Section 6.4.1. Delete bond and substitute tensile-adhesion test in accordance to D 5329.			

PART 3 EXECUTION Not used

END OF SECTION

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Standards Committee Submittal Sheet

Name of preparer: Jeff Saddler & Darrell Giannonatti
Title/Position of preparer: Productivity Coordinator & Director for Construction & Materials
Specification/Drawing/Item Title: Scope of Work
Specification/Drawing Number: 00725M

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

AGC approached UDOT senior management to address current partnering practices.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No Change

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at

http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

No Comments Received

ACEC Comments: (Use as much space as necessary.)

No Comments Received

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Jim McMinmee
Karl Verhaeren
Tim Rose / Rob Wright
Darrell Giannonatti
Tracy Conti
Robert Westover
Jeff Saddler

Contractors (Any additional contacts beyond “C” above.)

John Parson – Staker-Parson
Jeff Clyde & Norm Avery – WW Clyde
Brian Morin - Granite
Jim Golding – Geneva Rock
Kip Wadsworth – Ralph Wadsworth

Suppliers

Consultants (as required) (Any additional contacts beyond “C” above.)

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No Change

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

N/A

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

No Change

3. Life cycle cost.

N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

National survey of 30 partnered projects worth 684 million showed:
No Litigation
4.5 million saved in change orders and early completion
50% finished an average of 80 days early

H. Safety Impacts?

N/A

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

N/A

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1	Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.
Priority 2	Upon posting, this impacts projects being advertised.
Priority 3	Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 00725M

SCOPE OF WORK

Delete Article 1.4 and replace with the following:

1.4 PARTNERING

A. Partnering does not change the legal relationship of the parties to the Contract, and does not relieve either party from any of the terms of the Contract.

B. The Department encourages the formation of a strong partnership among the Department, the Contractor, and the Contractor's principal subcontractors. This partnership draws on the strengths of each organization to identify and achieve mutual goals.

C. Implement partnering concepts on all projects. Determine jointly between the Contractor and Department's Engineer to either bring in an independent third party firm to implement facilitated partnering or to jointly share in those responsibilities.

D. Contact the Department's Engineer within 30 days of Notice of Award and before the Preconstruction Conference to implement a third party facilitated partnering initiative. Determine jointly between the Contractor and Department's Engineer a facilitator for the meeting and determine attendees, agenda, duration, and location of a partnering workshop.

E~~C~~. Both the Department and the Contractor agree to, and share equally any costs to accomplish partnering.

F. Persons who should attend the workshop:

1. Contractor's corporate level manager.
2. Contractor and key project supervisory personnel.
3. Principal subcontractors.
4. Department's Deputy Construction Engineer.
5. Department's Region Construction Engineer.
6. Department's Resident Engineer and key project personnel.
7. Project Design Engineer.
8. Department's Project Manager.

9. Local government personnel.
10. Major utilities.

G~~D~~. Follow-up workshops may be held periodically as agreed by the Contractor and the Department.

Standards Committee Submittal Sheet

Name of preparer: Tim Biel
Title/Position of preparer: Engineer for Materials
Specification/Drawing/Item Title: Median Barrier Selection Process
Specification/Drawing Number: N/A

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

Effort to improve consistency between regions on barrier selections, between guard rail, cable, cast-in-place and pre-cast PCC. Department does not currently have a documented procedure for selecting barrier type. This process includes both functionality and cost.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

N/A

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

N/A

ACEC Comments: (Use as much space as necessary.)

None Yet

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Document is currently at Region and Central traffic engineers. Second round will be preconstruction and design consultants, along with any other identified stakeholders.

Construction Engineers

None Yet

Contractors (Any additional contacts beyond “C” above.)

N/A

Suppliers

N/A??

Consultants (as required) (Any additional contacts beyond “C” above.)

None Yet

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

N/A

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

   Ideally, this will reduce costs as it will require justification for use of PCC barrier that is not warranted for current traffic conditions

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

   Should improve consistency in application.

3. Life cycle cost.

   Part of the process

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Should improve consistency in application.

H. Safety Impacts?

Process is based on safety needs

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

None

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MEDIAN BARRIER SELECTION PROCESS

1. Determine if median barrier is performance warranted*
   a. Roadside Design Guide, Chapter 5 - Barrier Warrants
   b. FHWA mandate (currently under discussion) may require barrier in all medians.
   c. Use UDOT Standard Drawings, BA Series, for location and installation requirements.

2. Review options for barrier type
   a. Test Level 3 Barriers
      1) Median Barrier Guard Rail
      2) Median Cable Barrier (Will be Standard at end of Summer)
      3) Precast Concrete **Jersey** Barrier, not pinned.
   b. Test Level 4 Barriers
      1) Pinned Precast or Cast-in-place Concrete **Jersey** Barrier
   c. Test Level 5 Barriers
      1) Cast-in-place Concrete **Constant Slope** Barrier

Note: Precast Constant Slope Barrier is not allowed through UDOT Standards.

3. Determine performance level required
   a. Test Level ~~3 performance~~, or higher, is required for all ~~medians with barrier~~
   b. Warrants for Test Level 4 or higher
      1) Truck Percentage of 20%? or higher
      2) Crossover Accident Rate higher than expected value for facility
      3) FHWA Mandate (under discussion)

4. Preference Justification**
   a. If Test Level 3 is required
      1) Use Median Barrier Guard Rail or Cable Barrier unless Concrete Barrier is performance justified
      2) If concrete barrier is performance justified, determine concrete barrier type based on economic justification
   b) If Test Level 4 is required
      1) Determine concrete barrier type based on economic justification

Performance Justification: Determination of appropriate barrier type based on possible drainage issues, median width constraints, future roadway/corridor use and economic justification.

Economic Justification: Determination of appropriate barrier type based on life-cycle costs of barrier. LCC costs include initial construction costs, expected repair costs based on hit rates and severity, expected performance life and salvage/removal costs.

* This is not a justification process for median traffic control cable.

** Treat justifications as Design Exceptions and submit through the Design Exception process.

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Standards Committee Submittal Sheet

Name of preparer: Michelle A. Page
Title/Position of preparer: Research Program Manager
Specification/Drawing/Item Title: Update for New Products QIT
Specification/Drawing Number:

Enter appropriate priority level:
(See last page for explanation) **N/A**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
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3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

Recommendations following review of the new products process:
1) The R-52 new product submittal form updated to include a Life Cycle Cost Analysis section.
2) Developed a means for sharing the new product evaluation panel decisions with affected areas
a) Developed a website where decisions are posted following each meeting; with full acceptance withheld until the following meeting so divisions can respond accordingly.
b) Email division management a listing of new products reviewed in their area and include a website link.
3) Research contact number added to the product listings so users have access to additional information as needed.
4) Updated the Policy and Procedure for 08F-2 and 08F-3 to include latest job titles/descriptions and included the communication of panel decisions in the body of the Policy and Procedure.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

New Section added to the R-52 New Product Submittal Form

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

ACEC Comments: (Use as much space as necessary.)

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Contractors (Any additional contacts beyond “C” above.)

Suppliers

Consultants (as required) (Any additional contacts beyond “C” above.)

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

3. Life cycle cost.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

H. Safety Impacts?

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

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New Products Evaluation Panel **UDOT 08F-2**
Effective: July 9, 1993 Revised: May 12, 2005

Purpose

A New Products Evaluation Panel is established for the purpose of:

1. Developing standards and policies for the statewide implementation of products that have been tested and approved for use by the Department.

2. Developing recommendations for specific projects on which approved products can be implemented.

3. Review current technology on products that can be implemented within the Department. Should include review of SHRP products, Technology Transfer bulletins, etc.

The panel ~~will~~ reports to the Engineer of Research. Information regarding products approved by the panel for implementation will be forwarded to the Engineer for Preconstruction and the division responsible for implementation. This information will include an implementation plan, funding requirements, and time schedule.

~~To conduct business and to have a quorum, a~~ A minimum of nine voting members ~~shall be~~ in attendance at each meeting constitutes a quorum in order to conduct business.

Policy

The New Products Evaluation Panel ~~Implementation Panel~~ is composed of representatives from the following areas:

- Research Specialist (Chairman)
- Preconstruction (Value Engineering)
- Safety
- Structures
- Planning
- Construction
- Materials
- Maintenance
- Development Engineer
- Research Program Manager
- FHWA Representative
- SHRP Coordinator
- Other participants invited by the Chairman (Non-Voting)

~~The Chairman of the Panel shall be the Research Specialist.~~ Redundant with first bullet.

The Chairman ~~shall~~ distributes to each panel member and invited participants an agenda outlining the date, time, place of meeting, and items to be discussed.

The Chairman ~~shall~~ appoints a secretary, who ~~will~~ prepares a summary of the meeting proceedings to be distributed to all members with the agenda.

A voice vote ~~shall be~~ is taken on all items requiring a consensus of the members. When a consensus is not clear to the Chairman by a voice vote, take a roll call.

Meetings of the Implementation Panel should be held quarterly or as often as necessary to serve the purpose of the panel. Meetings may be held at various locations throughout the State in order to examine test sections of various products and other conditions that may present themselves.

Experimental Features and Evaluation of New Products

UDOT 08F-3

Effective: February 1, 1974 Revised: May 12, 2005

Purpose

To allow vendors, suppliers, and contractors an avenue to have their products considered for use in UDOT projects. To document product evaluation through research field performance testing as an experimental feature.

Policy

To establish and place responsibility for conducting experimental feature projects and/or the evaluation of new products. This evaluation process includes the establishment of lines of authority, preparing proposals or work plans, evaluation techniques, preparation of necessary reports, documents, and implementation.

The experimental feature or new product may be either a material process, method, equipment item, traffic operation device, etc., that has a potential value to the Utah Department of Transportation.

Procedures

Experimental Features **UDOT 08F-3.1**

Responsibility: Engineer or other Interested Individual (Instigator)

Actions

1. Meets with Development Engineer to discuss a proposed experimental feature.

Responsibility: Development Engineer

2. Reviews the proposed experimental feature with the Research Program Manager and Engineer for Research and Development.

3. Reviews the proposed experimental feature with the FHWA Research & Technology Transfer Engineer for:

   (a) Compliance with FHWA procedures,

   (b) Information the FHWA engineer or the engineer's office may have that would be of assistance in the project, particularly data that may be available from federal or state agencies, and

   (c) Obtaining FHWA concurrence for the project.

4. Informs the instigator as to acceptance or rejection of the proposed study.

5. Upon acceptance of the established need as an experimental feature, categorizes and assigns a Principal Investigator in conjunction with the instigator's recommendations.

Responsibility: Principal Investigator

6. Prepares and submits work plan to Development Engineer in accordance with guidelines available at the Research Section Development Unit.

Responsibility: Development Engineer

7. Reviews work plan with sponsor for completeness and obtains necessary authorizations.

8. Returns work plan to Principal Investigator and coordinates the steps as outlined in the work plan.

Responsibility: Principal Investigator

9. Prepares other documents as necessary in cooperation with the Conducting Division or Region.

10. Assigns duties to the Secondary Investigator.

Responsibility: Conducting Division or Region

11. Works with the Secondary Investigator for construction procedures, etc.

Responsibility: Secondary Investigator

12. Builds, install, monitors, etc., the feature.

Responsibility: Principal Investigator

13. Evaluates, prepares, and submits the required reports to the Development Engineer for review before interim and/or final reports are published.

Responsibility: Development Engineer

14. Reviews interim and/or final reports and recommendations. Submits copies to Research Program Manager for final review prior to publishing.

Responsibility: Research Program Manager

15. Reviews interim and/or final reports and recommendations prior to publishing. Submits edits to Development Engineer.

Responsibility: Development Engineer

16. Coordinates final edits with Principal Investigator and publishes interim and/or final reports and recommendations.

Responsibility: Product Manufacturer or Representative

Actions

1. Meets with potential users of the product.

Responsibility: Product Manufacturer Representative or Potential User

2. Refers product manufacturer with recommendations to the Development Unit for evaluation.

Responsibility: Product Manufacturer or Representative

3. Meets with Development Unit to discuss product. Representative will be informed that Product Evaluation Form R-52 must be completed and returned to the Development Unit before any action or testing takes place.

Responsibility: Research Specialist

4. Reviews completed Form R-52 to accomplish the following:

   (a) To point out the merits of the product with primary and alternative uses if any.

   (b) To familiarize the Development Unit with the product in general.

   (c) To enable the Development Unit to collect questions and submit them to the manufacturer for consideration prior to a formal meeting or demonstration.

   (d) To aid in the appointment of the best qualified methods, persons, and/or divisions to evaluate the product.

   (e) To make sure vendor has adequate independent test data to substantiate his claim.

   (f) If the product has been used by other states, check with that state concerning the work and performance of the product.

5. Informs the product representative as to the status of the products analysis in regards to acceptance, rejection, or that further analysis is warranted before specified conclusions can be ascertained. If none of the previous apply then the analysis will be filed for informational purposes only for possible review or consideration at a later time.

6. Assigns Principal and Secondary Investigators to be in charge of all engineering analysis for procedures used in product evaluation.

Responsibility: Principal Investigator

7. If necessary will meet with the product representatives to discuss the product and its application.

8. Initiates, conducts, and documents product evaluation; then meets with Research Specialist and Development Engineer to discuss results.

9. Completes final reporting for experimental features and provides research recommendation and implementation plan.

Responsibility: Development Engineer

Actions

1. Submits the results of the experimental feature or new product, with recommendations in the proper format, to the New Products Evaluation Panel.

2. Directs the preparation of experimental results in useable form for final implementation as specifications, standards, procedures, etc., and transmits to the Standards Committee.

Responsibility: Standards Committee

3. Approves and adopts results as a standard operating practice, specification, standards, procedures, etc.

Standard Committee Submittal Sheet

Name of preparer: **John Leonard**
Title/Position of preparer: **Operations Engineer**
Specification/Drawing/Item Title: **Traffic Slow Down**
Specification/Drawing Number: **Section 00555M**
Date Process Started: _____ Date Process Completed: _____
Status: Approved Disapproved Sent Back For Review

Enter appropriate priority level: 3
(See last page for explanation)

Sheet not required on editorial or minor changes to standards.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page, (http://www.udot.utah.gov/esd/specbook/StandardsCommittee.htm).
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

There have been instances where contractor personnel, without the knowledge of the Department or local law enforcement, have performed a slow down on the interstate. Some of these have resulted in crashes. Senior management has requested a supplemental specification be created to address this issue.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

There is no change to measurement and payment. This supplemental requires notification and a set procedure for performing a slow down.

C. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Sent to all Construction Engineers. Only response from Karl Verhaeren with the concern that it is hard to have one size fit all with both rural and urban facilities.

> I agree, but when you have specific language about the number of lanes...under (d) "...the first two lanes...", it's now describing a situation that doesn't routinely exist. When a contractor reads this, I believe they will view it as non-applicable on a two-lane interstate. In my opinion, we just need to be careful about describing a rather specific situation and then working it into a one-size-fit-all approach, and look for ways on either a Department special or supplemental specification to provide for flexibility in the language so that the special or supplemental fits well with 90%+ of the projects we do.
>
> Peak hours may also vary on different routes. Another approach may be to prompt the designer to enter the peak traffic hours. Are there consequences of exceeding the five minute slowdown?
>
> Response:
> Peak hours and durations may be modified by the Region Traffic Engineer, and the designer has the option of proposing a Modified Specification in their project to address any site specific issues.

Contractors

Was provided to Mont Wilson of AGC. No responses received.

Suppliers N/A

Consultants (as required)

Was provided to Tyler Yorgeson of the ACEC

> I sent copies of the Special Provision for Section 0555, Prosecution and Progress, Limits of Operations, Traffic Control to ACEC members for review. I did not receive any specific comments to pass along to you.
>
> I wanted to confirm to you with this e-mail that not having received any comments from ACEC by June 1 does indeed indicate that we do not have any specific comments on the proposed changes.
>
> Tyler Yorgason P.E.
> Civil Science, Inc.

Others (as appropriate)

Maintenance

Was sent to Central Maintenance. Response from Richard Clarke, Engineer for Maintenance.

> This looks fine to me
> Rich

Traffic and Safety

Was sent to all Region Traffic Engineers. Received response from two.

Mack Christiansen, R-2.

John I do not understand the need for this special. all our slow downs are coordinated with the IMT. when they are notified in advance they will arrange for the highway patrol and will set up what other ramp controls are also needed. It works quite well.

Response:
While IMT may be able to assist the officers and the contractor as resources and availability allow, they do not have the statutory authority that public safety officers have, and IMT is available only in very limited areas of the state. It is not the responsibility of the RE, IMT, or even the officers to make the arrangements for this work. It is the contractor's responsibility to make the coordinations that are necessary for his work to proceed in a safe manner.

Others:

Rob Wright, R-1

Is this a special that will be required on all jobs, or an as-determined by the design engineer?

I think a "one size fits all" spec is probably not a real great idea. Could we have the peak hours determined by either the Region Traffic Engineer or Resident Engineer. They will not be the same in rural areas as in urban areas. Also, 5 minutes doesn't seem like a lot of time to do some of the temp closures we have done in the past. Could we have the time limited by the RE?

Also is 00555 the place for this? I think it would be better in 01554.

Thanks for the opportunity to comment.
Rob

Dan Young, R-1

The only change I would suggest is on the section where it says:

"Notify the Department two days prior to slow down."

I would change it to read:

"Notify and obtain approval from the Engineer a minimum of two days prior to slow down."

Dan

Scott Andrus, R-3

John, I would agree with Rob and Karl that this should be addressed in a project specific approach rather than a one size fits all. Thanks

FHWA

Was sent to FHWA—no responses

D. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

Possible increase to lump sum cost of traffic control if reimbursement is required for law enforcement.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

Will require coordination with law enforcement to provide officer and equipment. May require additional resources from contractor/maintenance if closure

3. Life cycle cost.

N/A

E. Safety Impacts?

Provide better coordination among the various groups responsible for safety on a project (Traffic and Safety, Construction, Maintenance, Maintenance, and the Contractor). We have experienced severe crashes, and adherence to this Specification should eliminate this issue.

F. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

This is the first time this has been presented to the Standards Committee. It has been prepared at the request of Senior Administration.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect two weeks later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 00555M

PROSECUTION AND PROGRESS

Add the following to Part 1, Article 1.9:

D. Traffic Control:

1. Traffic slow downs are isolated events where traffic on a highway is reduced in speed to provide a gap for work to proceed (examples include the crossing of the highway with heavy equipment or the adjustment of traffic control devices).
   a. Notify the Department two days prior to slow down.
   b. Use a Highway Patrol Trooper (or other public safety officer), in a marked vehicle with overhead flashing lights, to conduct the slowdown. Make arrangements two days prior to the slowdown with the public safety agency for use of the officer and vehicle.
   c. Use contractor vehicles, equipped with overhead amber flashing beacons, to supplement the public safety vehicle in the slow down when required by the officer.
   d. Use the officer in the marked vehicle to slow down the first two lanes, and then use either contractor supplied vehicles and/or additional officers and marked vehicles at the rate of one vehicle per lane thereafter to effect the slow down. Additional vehicles as described in this Section may be used in the traffic slow down.
2. No traffic slowdowns will be allowed during peak hours.
   a. Peak Hours: 6:30 am to 9:00 am, 3:30 pm to 7:00 pm, M-F.
3. Length of duration of any traffic slowdown not to exceed 5 minutes

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Standards Committee Submittal Sheet

Name of preparer: Deryl Mayhew, Robert Strong, Blake Hansen
Title/Position of preparer: ITS Engineer
Specification/Drawing/Item Title: ATMS Standard Specifications
Specification/Drawing Number: 13551 through 13595

Enter appropriate priority level:
(See last page for explanation) ~~2~~ 3

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
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3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

[Response] In April 2005, many changes were made to the AT Series Standard Drawings. Some of these changes caused inconsistencies with the ATMS Standard Specifications. The proposed changes were mainly initiated in order to make them consistent with the updated Standard Drawings.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

[Response] No change.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

[Response] The modified standards were submitted to the AGC by Sam Sherman for comment on 5/25. No comments were received.

ACEC Comments: (Use as much space as necessary.)

[Response] The modified standards were submitted to the ACEC by Sam Sherman for comment on 5/25. No comments were received.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

[Response] Several comments were received from the In-house ATMS maintenance and construction supervisor, William (Bill) Butterfield.

Construction Engineers

[Response] No comments made.

Contractors (Any additional contacts beyond “C” above.)

[Response] No comments made

Suppliers

[Response] No comments made.

Consultants (as required) (Any additional contacts beyond “C” above.)

[Response] TransCore ITS provided comments and assisted UDOT in revising the Standard Specifications. Revisions were made to be consistent with Standard Drawings, culminating in the finished Standard Specifications submitted.

Others (as appropriate)

[Response] No comments made.

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

[Response] No impact anticipated.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

[Response] No impact anticipated.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

[Response] No impact anticipated.

3. Life cycle cost.

[Response] No impact anticipated.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

[Response] No impact anticipated.

To be consistent with changes to Standard Drawings.

H. Safety Impacts?

[Response] It is not anticipated that the revisions will have any effect on safety.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

[Response] Many changes were made to stay consistent with the ATMS Standard Drawings which were revised in April.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1	Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.
Priority 2	Upon posting, this impacts projects being advertised.
Priority 3	Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

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SECTION 13551M

GENERAL ATMS REQUIREMENTS

Delete Article 1.3 and replace with the following:

1.3 REFERENCES

A. AASHTO Roadside Design Guide

~~A~~B. ASTM: A 153: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

~~B~~C. ~~ASTM: A 307: Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength~~ASTM D 3005, Type I or II. UL 510

~~C~~D. ASTM F 1554: Standard Specification For Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

~~D~~E. American Wire Gauge (AWG)

~~E~~F. Electronic Industries Association (EIA) and Telecommunications Industry Association (TIA) Specifications

G. Federal Highways Administration Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals

~~F~~H. International Municipal Signal Association Regulations

~~G~~I. National Electric Code (NEC)

~~H~~J. Rural Electrical Association (REA) Bulletins

~~I~~K. Underwriters Laboratory (UL)

~~J~~L. USDA Rural Utilities Service (RUS) Bulletin

Delete Article 2.1 and replace with the following:

2.1 DOCUMENTATION

A. Submittals

1. Provide two copies of all documentation to the engineer.
2. Provide one copy of the test reports, configuration data, and as-built drawings in each of the field cabinets.
3. The general purpose and content of all required submittals is described in the following table. Refer to the appropriate specifications for the details of the submittal requirements and test procedures for each ATMS device type. Obtain UDOT's newest version of the test procedures for the local field operations test from the UDOT website. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

Name	Timeline	Description
Contractor Furnished Material and Equipment Lists	Submit within fifteen business days from the Notice to Proceed.	Includes the name of manufacturer, size, and identification number. All contractor furnished equipment must be approved by the Engineer prior to ordering.
Test Reports (for Cable and Conductor test, the Local Field Operations Test, and Acceptance Tests.)	Submit within five business days from the completion of a successful test.	To be provided after the completion of a successful test. Test Reports are required for each appropriate ATMS device installation, including, but not limited to CCTV, VMS, RWIS, WIM, Traffic Monitoring Detector Loops or other specified detection device, and Fiber Optic Communication Systems. Provide Test Reports in a neatly bound (3' hole) and printed format. The Test Reports will include the following: 1) All test results (including failed tests) 2) Description of any observed discrepancies 3) Description of required corrective action 4) Estimated time to complete corrective action and re-test 5) Results of any corrective action
Completion Notice	Provide to the Engineer after all devices have successfully passed the Local Field Operations Tests, at least 5 business days prior to beginning acceptance tests.	Consists of the certification that all ATMS installations are compliant with all project requirements. Use the Local Field Operations Testing Completion Notification Form obtained from the UDOT website. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

Name	Timeline	Description
Compliance Certificate	Submit within five business days of receipt by the Manufacturer for each site.	Provide an installation compliance certification by the manufacturer on required equipment.
Manufacturer's Equipment Documentation	Must be received and accepted prior to Final Acceptance	For all contractor furnished items, provide all factory issued manuals per this section, article 2.1, paragraph B, software, detailed shop drawings, wiring diagrams, certifications, warrantees, instruction sheets, and parts lists to the engineer.
As-Built Drawings	Must be received and accepted prior to Final Acceptance	Refer to section 01721

B. Factory Issued Manuals

1. Acceptable factory manuals must contain technical, diagnostic, and maintenance (preventative and troubleshooting) information. Advertising brochures and catalog cuts not accepted.

Delete Article 3.3 paragraph C and replace with the following:

C. Follow the guidelines outlined in the AASHTO Roadside Design Guide for minimum distances from the traveled way to installed equipment.

Delete Article 3.5 paragraph C and replace with the following:

C. Conform to minimum requirements of ASTM F 1554 for anchor bolts. Do not weld anchor bolts to reinforcing steel. Galvanize all nuts, washers and anchor bolts in accordance with ASTM A 153.

D. Install anchor bolts in accordance with the Federal Highways Administration Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals.

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SECTION 13552M

RAMP METER SIGNALS AND SIGNING

Delete Article 1.1 paragraph A and replace with the following:

A. Furnish and install conduit, junction boxes, signal heads, signing, mounting brackets, wire, grounding, and foundations. Install all state furnished items. Includes all materials, labor, workmanship, equipment, testing, documentation, and incidental items required to install and test a complete and operational Ramp Meter system as shown on the plans and details.

Delete Article 2.2 and replace with the following:

2.2 RAMP METER POLE MOUNT SIGNAL ASSEMBLY

A. 8-inch 1 section signal head with red LED Module for enforcement. No back plate required.

B. For all signal heads: Refer to Section 02892. Louvered back plate required.

C. Regulatory Sign: MUTCD R10-6; 24-inch x 36-inch.

D. 24-inch x 18-inch VEHICLE PER GREEN Sign: Refer to AT series Standard Drawings.

E. All signal head housings: yellow with hoods.

F. Signal Pole: Refer to Section 02892 and SL series Standard Drawings.

G. Foundation Concrete: Class AA(AE) Concrete (Refer to Section 03055).

H. Provide two “Z” bars on the back of the sign to support against snow plow activity. Refer to SL Series Standard Drawings.

Delete Article 2.3 and replace with the following:

2.3 RAMP METER MAST ARM SIGNAL ASSEMBLY

A. For 12-inch signal heads: Refer to Section 02892. Louvered back plate required.

B. 60-inch x 36-inch VEHICLE PER GREEN EACH LANE Sign: Refer to AT series Standard Drawings.

C. All signal head housings: yellow with hoods.

D. Signal Pole: Refer to SL series Standard Drawings.

E. Reinforcing Steel: Coated steel (Refer to Section 03211).

F. Concrete: Class AA(AE) Concrete (Refer to Section 03055).

Delete Article 2.4 and replace with the following:

2.4 ADVANCE FLASHING BEACON SIGN

A. Two 8-inch signal heads with yellow LED Module: Refer to Section 02892. No back plate required.

B. Warning Sign: MUTCD W3-3 (modified for 2 LED Module ramp meter signal head), 36-inch x 36-inch.

C. 30-inch x 24-inch black on yellow METERING WHEN FLASHING Sign: Refer to AT series Standard Drawings.

D. All signal head housings: yellow with hoods.

E. Signal Pole: Refer to Section 02892 and SL series Standard Drawings.

F. Foundation Concrete: Class AA(AE) Concrete (Refer to Section 03055).

G. Provide two “Z” bars on the back of the sign to support against snow plow activity. Refer to SL Series Standard Drawings.

Delete Article 2.6 paragraph A and replace with the following:

A. Provide one 7-conductor signal cable to each signal head. Follow section 02892 for signal cable specifications.

Add the following to Part 2, Article 2.8:

C. 240-volt 400 watt luminaries may be used if 480-volt power service is not available.

Delete Article 3.2 and replace with the following:

3.2 FOUNDATION

A. All material and workmanship conforms to AASHTO's Standard Specifications for Highway Bridges.

B. Prior to work, verify that the installation of the signal heads, mast arm, pole, and foundation in the location marked in the field has no conflict with existing utilities, underground and overhead. Comply with all utility and Blue Stakes requirements.

C. See AT Series Standard Drawings for ramp meter signal assembly and advance flashing beacon assembly details and placement.

D. Excavation: Refer to Section 13551.

E. Caissons conform to AASHTO Division II Section 5, Drilled Piles and Shafts. Caissons are drilled into either native soil or compacted fill.
   1. If formwork is required during drilling, the forms may be withdrawn during concrete placement.
   2. Cast the top of the caisson against the formwork for appearance.

F. Place concrete directly into the excavation. Use minimum forming.

G. Do not weld reinforcing steel, conduit, or anchor bolts; tie reinforcing steel and conduit securely in place.

H. Coat all reinforcing steel to conform to AASHTO M284, M111 or ASTM A 153 and AASHTO M31 Grade 420, respectively. Coat the ends of cut reinforcing with approved epoxy coating.

I. Use class AA(AE) for all cast-in-place concrete. Cap all conduits before placing concrete.

J. Install weep hole in foundation per SL series Standard drawings.

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SECTION 13553M

ATMS CONDUIT

Delete Article 1.3 and replace with the following:

1.3 REFERENCES

A. ASTM D 2241: Standard Specification for Poly-Vinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series)

B. American National Standards Institutes (ANSI)

C. American Wire Gauge (AWG)

D. American National Standards Institutes (ANSI)

E. International Municipal Signal Association (IMSA) Standards

~~E~~F. National Electric Code (NEC)

~~F~~G. National Electrical Manufacturers Association (NEMA)

~~G~~H. Railroad Specifications

~~H~~I. Underwriters Laboratory

Delete Article 2.1 paragraph H and replace with the following:

H. Provide fiber optic and electrical buried cable marker warning tape that meets the following requirements:
   1. Material: Composite reinforced thermoplastic.
   2. Tape Color: Orange (communication) or Red (electric).
   3. Text: Caution Buried Communication Cable or Caution Buried Electric (front and back).
   4. Maximum distance between text: 5 feet.
   5. Text Color: Black.
   6. Width: 3-inch minimum (face or diameter).

Delete Article 2.1 paragraph I and replace with the following:

I. Provide 1 green insulated IMSA 51-3 #14 locator wire in 1-inch conduit in each trench where ATMS Conduit is installed. Place the locator wire conduit at the top of all other conduit in the trench as shown in AT series Standard Drawings. Install locator wire in existing non-multiduct conduit where new fiber optic cable is to be installed.

Delete Article 3.1 paragraph F and replace with the following:

F. Install all conduit bends to have a radius that is not less than the following:
   1. 24 inches within the cabinet and pole foundations
   2. 36 inches in all other locations

Delete Article 3.1 paragraph Q3 and replace with the following:

3. Reduced maximum spacing if horizontal or vertical deflection prevents the installation of cable within maximum tensile rating of the cable or location wire.

Delete Article 3.2 paragraph A and replace with the following:

A. Paved Surface (asphalt concrete):
   1. Saw cut (Refer to 02705) roadway-to-roadway base on both sides of trench to provide clean, straight wall for T-patch prior to any backhoe use per Section 02705.
   2. Refer to AT series Standard Drawings for depth of flowable fill under paved surfaces.
   3. Minimum soil compaction under pavement: 96 percent.
   4. Evenly apply tack coat before final backfill.
   5. Restoration patch: match the composition, density, and elevation (1/4 inch), of the existing surface per Section 02741.

Delete Article 3.3 paragraph F and replace with the following:

F. Install manufactured sweeps (11 1/4, 22 1/2, 45, 90 degree angle) with conduit compatible bell and spigot ends. Do not field bend conduit.

Add the following to Part 3, Article 3.4 paragraph C

C. Contain and remove all drilling fluid outside the bore immediately. Contractor's estimate will not be processed until all drilling fluid outside the bore has been removed and properly disposed of.

Add the following to Part 3, Article 3.5 paragraph C

C. Use existing conduit only in-situ and as approved by the Engineer or shown on design plans. Use new materials on all new installations.

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SECTION 13554M

POLYMER CONCRETE JUNCTION BOX

Delete Article 2.2 and replace with the following:

2.2 JUNCTION BOXES AND LIDS

A. Provide junction boxes and vaults that resist water absorption in accordance with ASTM D 570.

B. Select Junction Boxes for load rating as defined on AT series Standard Drawings as follows:

1. Load Rating 1: Incidental Vehicular Traffic
   a. In any paved area immediately adjacent to the mainline, such as shoulders, snow storage areas, or vehicle pullout areas, provide boxes, rings, and lids that sustain a minimum vertical test load of 33,500 lbs over a 10-inch x 20-inch square.

2. Load Rating 2: Non-wheel Loading Accessible
   a. In area not in traveled way, provide boxes, rings, and lids that sustain a minimum vertical test load of 22,500 lbs over a 10-inch x 20-inch square.

C. Provide a poured-in-place 1-inch thick grout floor, with a 1-inch diameter drain, for all type I, II, and III-Polymer Concrete Junction Boxes or a box with a prefabricated floor with a 1-inch drain hole. Refer to ASTM C 579 and ASTM C 580 for test methods for grout.

D. Provide lid for all junction boxes as specified by application.

E. Provide lids with a non-skid surface with minimum coefficient of friction of 0.50, per ASTM C 1028. Coatings will not be approved.

F. Manufacture lids with the following markings in the logo area, in 1-inch recessed letters:
   1. "Traffic Signal" when the junction box contains cables or wires for traffic signal (Refer to Section 02892), CCTV, VMS, RWIS, WIM, ramp meter, traffic monitoring, or any other ATMS element (Refer to Section 13551).
   2. "Electric" when the junction box contains power conductors used for traffic signal, CCTV, VMS, RWIS, WIM, ramp meter, traffic monitoring, or any other ATMS element.
   3. "Street Lighting" when the junction box contains street lighting conductors only. Inscribe "High Voltage" below the words "Street Lighting" when the junction box contains voltage above 600 V.
   4. "Communication" when the junction box contains multi-duct conduit for future use.
   5. "Sprinkler Control" when sprinkler control conduit enters the junction box.

G. Provide lids with recessed access point to allow removal of cover with a hook or lever. Repair damage to the pulling point in the lid.

H. Provide lids with vandal-resistant stainless steel recessed bolts.

Delete Article 3.1 paragraph H through N and replace with the following:

H. Install bushings on end of all conduit prior to cable installation.

I. Do not install conduit in corner of junction box or within 2 inches of corner of junction box. Extend conduit 2 inches beyond the inside wall of the junction box. Refer to AT series Standard Drawings.

J. Enter conduit through the sides of the junction box and not from the bottom. Place the conduit at least three inches above the floor.

K. Place the recessed access point in a location that provides both leverage and safety.

L. Saw cut concrete or other improved surfaces that require removal in the sidewalk area. Remove entire section of sidewalk. Replace with in-kind materials to match the existing grade.

M. Provide 12 inches deep free draining granular backfill borrow directly under junction box.

N. Install department approved expansion joint material around entire periphery of ring for junction boxes installed in paved surface.

O. Record GPS coordinates for all junction boxes according to Section 13551.

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SECTION 13555M

ATMS CABINET

Delete Article 2.1 paragraph A and replace with the following:

A. Concrete: AA(AE) required. Refer to Section 03055.

Delete Article 3.2 paragraph C. and replace with the following:

C. Concrete: AA(AE) required. Refer to Section 03055.

Delete Article 3.2 paragraph G and replace with the following:

G. Extend conduit 2 inches above the floor of the cabinet foundation.

Delete Article 3.2 paragraph H and replace with the following:

H. Conduit
   1. Install all conduit in base of cabinet in a 12-inch x 18-inch rectangle centered in the cabinet base.
   2. Refer to the Project Plans for the number, size, and orientation of all conduits entering the junction boxes.
   3. Refer to AT series Standard Drawings for number and type of conduit used between the cabinet and adjacent junction boxes.
   4. Above ground, use galvanized rigid steel; underground, use PVC.
   5. Install bushings on the ends of all conduit prior to cable installation.
   6. Provide 1 inch minimum spacing between each conduit in cabinet base. Cap conduit at both ends until used.

Delete Article 3.4 and replace with the following:

A. Unless specified on the plans, install either a supplemental disconnect as described on AT series Standard Drawings, or an approved underground service pedestal as described in the SL series Standard Drawings and in Section 13561.

B. Install supplemental disconnect or underground service pedestal between 10 and 15 feet from the cabinet, away from roadway. Field locate with the Engineer. Install the unit such that the door is downstream of traffic flow.

C. Ground disconnect on ground rod located in Type I junction box at the cabinet base.

D. Ground the transformer to the control cabinet ground terminal.

E. Install disconnect and/or transformer per manufacturer's instructions.

Delete Article 3.6 paragraphs A and B and replace with the following:

A. Refer to section 13561 for Power Service.

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SECTION 13556M

CLOSED CIRCUIT TELEVISION (CCTV) ASSEMBLY

Delete Article 1.3 and replace with the following:

1.3 REFERENCES

A. AASHTO M 31: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

B. AASHTO M 111: Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products

C. AASHTO M 270 Grade 36: Carbon and High-Strength Low-Alloy Structural Steel Shapes, Plates, and Bars and Quenched-and-Tempered Alloy Structural Steel Plates for Bridges

D. AASHTO M 284: Epoxy Coated Reinforcing Bars

E. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Highway Bridges

F. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals

G. AASHTO Division II Section 5

H. AASHTOs Standard Specifications for Highway Bridges

I. ASTM A 36: Standard Specification for Carbon Structural Steel

J. ASTM A 123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron or Steel Products

K. ASTM A 153: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

L. ASTM A 307: Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

M. Electronic Industries Association (EIA) Standards

N. Federal Highways Administration Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals

~~N~~O. International Municipal Signal Association (IMSA) Specifications

~~O~~P. National Electric Code (NEC)

Delete Articles 2.6 and 2.7 and replace with the following:

2.6 DATA SURGE SUPPRESSOR

A. Surge suppression: State furnished IPS-RDPE Unit.

2.7 CCTV CABLE

A. Provide type composite CCTV cable to meet or exceed the following requirements:

1. Outer Jacket
   a. Type 4E
   b. Type CMG CMR C
   c. UL listed
   d. JKT Riser

2. Data
   a. 2 stranded conductors
   b. 18 AWG
   c. 0.10 inch PVC jacket thickness

3. Power
   a. 3 stranded conductors
   b. 12 AWG
   c. 0.12 inch PVC jacket thickness

4. Video
   a. 1-RG59 coaxial cable
   b. 95 percent Braid Coverage
   c. O/A 0.03 inch PVC

Add the following to Part 3, Article 3.3:

B. Torque anchor bolts to 770 ft-lb in accordance with the Federal Highways Administration Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals.

Delete Article 3.7 paragraph E and replace with the following:

E. Make all camera cable connections between the CCTV assembly and corresponding cabinet equipment as required to provide a fully operational CCTV system.

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SECTION 13557M

VARIABLE MESSAGE SIGN

Delete Article 1.1 paragraph B and replace with the following:

B. Furnish, install, and test VMS tubular support structures, VMS sign assembly, sign connection hardware, catwalk, cabinet foundation, communications cable and any additional equipment required. Install state furnished ATMS cabinet. Furnish all incidental items required to provide a complete cable connection between VMS controllers as shown in the details and specifications. Test the installed VMS and adjust the viewing angle as required.

Delete Article 1.2 and replace with the following:

1.2 RELATED SECTIONS

A. Section 01554: Traffic Control

B. Section 02466: Drilled Caisson

C. Section 02841: W-Beam Guardrail

D. Section 02843: Crash Cushions

E. Section 02844: Concrete Barrier

F. Section 03055: Portland Cement Concrete

G. Section 03152: Concrete Joint Control

H. Section 03211: Reinforcing Steel and Welded Wire

I. Section 03310: Structural Concrete

J. Section 05120: Structural Steel

K. Section 13551: General ATMS Requirements

~~L. Section 13553: ATMS Conduit~~

~~M~~L. Section 13554: Polymer Concrete Junction Box

~~N~~M. Section 13555: ATMS Cabinet

~~O~~N. Section 13595: ATMS Integration

Delete Article 1.3 and replace with the following:

1.3 REFERENCES

A. AASHTO M 31: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

B. AASHTO M 111: Zinc (Hot-dip Galvanized) Coatings on Iron and Steel Products

C. AASHTO M 232: Zinc (Hot-dip Galvanized) on Iron and Steel Hardware

D. AASHTO M 270: Carbon and High-Strength Low-Alloy Structural Steel Shapes, Plates, and Bars and Quenched and Tempered Alloy Structural Steel Plates for Bridges

E. AASHTO M 284: Epoxy Coated Reinforcing Bar

F. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals

G. ASTM A 36: Carbon Structured Steel

H. ASTM A 53: Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

~~I. ASTM A 123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products~~

~~J. ASTM A 153: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Hardware (nuts, washers, and anchor bolts)~~

~~K~~I. ASTM A 307: Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

~~L~~J. ASTM A 325: Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

~~M~~K. ASTM A 563: Carbon and Alloy Steel Nuts

~~N. ASTM B 766: Cadmium Coatings on Iron, Steel, and Other Metals~~

~~O~~L. ASTM F 436: Hardened Steel Washers

~~P~~M. ASTM F 593: Stainless Steel Bolts, Hex Cap Screws, and Studs

~~Q~~N. ANSI/AASHTO/AWS D1.5: Welding Specifications

Delete Article 3.4 paragraph A.3 and replace with the following:

3. Rake post as necessary during sign erection using leveling nuts to level the sign panels. At final position wrench tighten both top and bottom anchor bolt nuts against the base plate. Obtain all bolt torque values from the design or the Engineer.

Delete Article 3.4 paragraph B and replace with the following:

B. All Other Structural Steel:
1. Use one sign-mounting bracket at each sign Z bracket. See sign fabricator's drawings for number and location of Z brackets.
2. Pre-tension steel rod to 11,000 lbs.
3. Sign placement on horizontal member may be adjusted up to 3/8 inches upward for VMS platform to match catwalk elevation.
4. Refer to ASTM A 36: Standard Specification for Carbon Structural Steel, and AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Delete Article 3.5 and replace with the following:

3.5 VMS CABINET

A. Install ATMS cabinet according to section 13555

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SECTION 13561M

ATMS POWER SERVICE

Add the following to Part 2, Article 2.1:

K. Use copper rated RHH-USE-RHW for all underground and riser electrical conductors.

Delete Articles 3.1 paragraphs E through G and replace with the following:

E. Ground all electrical equipment, including cabinets in accordance with the NEC requirements. Hard draw all ground wires.

F. Supply all conduit and conductors to power source connection location. Final connection is to be made by the power company.

Delete Article 3.2 paragraph A and replace with the following:

A. Make timely and appropriate arrangements for the installation of power service.

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SECTION 13594M

FIBER OPTIC COMMUNICATION

Delete Article 2.3 paragraph A and replace with the following:

A. With the following characteristics and as specified on the plans:
   1. LC (standard)
      a. Factory installed or field installed LC or LC compatible connectors.
      b. Ceramic ferrules.
      c. Maximum insertion loss: 0.30 dB.
      d. Connector back reflection: greater than 35 dB.
   2. ST (to be used only where approved)
      a. Factory installed or field installed ST or ST compatible connectors.
      b. Ceramic ferrules and metallic connector bodies.
      c. Maximum insertion loss: 0.30 dB.
      d. Connector back reflection: greater than 35 dB.

Delete Article 2.3 paragraph C and replace with the following:

C. Furnish and install new fan-out kits to replace any existing fan-out kits that must be severed in order to make fiber terminations.

Delete Article 2.4 and replace with the following:

A. Provide splice enclosures with the following minimum characteristics:
   1. Comply with Telcordia GR-771
   2. Pass Bellcore Testing Requirements
   3. Corrosion resistant shell
   4. Allow re-entry without replacing the cable seals
   5. One 3-section end plate with 6 pre-molded cable entry ports
   6. One blank end plate
   7. Hinged splice trays to provide easy access to splices on other trays
   8. Strength member tie-off
   9. Mechanism to resist cable pull-out
   10. All required accessories to complete the splice

B. Type A:
   1. Accommodates up to 288 splices
   2. Contains 2 or more 36-count splice trays

C. Type B: For locations with up to 48 splices.
   1. Accommodates up to 48 splices
   2. Contains 2 or more 12-count splice trays

Standards Committee Submittal Sheet

Name of preparer: Ray Cook
Title/Position of preparer: Senior Design Engineer
Specification/Drawing/Item Title: Prestressed Concrete
Specification/Drawing Number: 03412M

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

This specification adds the requirement for the Contractor to submit an Erection Plan prior to beginning girder erection. It addresses Department concerns for public safety and for limiting Department liability during bridge girder erection. It is a result of the collapse of a temporarily supported girder during bridge construction in Denver, Colorado that resulted in the death of a family. It also places responsibility on the contractor to prevent overstressing in steel girders during erection. Most of the added requirements are taken from the AASHTO LRFD Bridge Construction Specifications, so they are industry standard requirements.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No change.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

No comments received.

ACEC Comments: (Use as much space as necessary.)

No comments received.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

All contacts were by email. Changes were made to the proposed specification based upon comments received and a similar Colorado DOT specification.

Construction Engineers

Dennis Simpir, Construction, Region 1 – No Comment
Rob Wight, Construction, Region 2 – No Comment
Scott Andrus, Construction Engineer, Region 3 – No Comment
Karl Verhaeren, Construction engineer, Region 4 – Suggested replacing “safety” with “protection” in 03412M 3.7 A.

Contractors (Any additional contacts beyond “C” above.)

None.

Suppliers

Reed Bradley, Eagle Precast, Prestressed Concrete Beam Fabricator – The majority of comments submitted attempted to differentiate the responsibilities of the General Contractor, the Bridge Subcontractor and the precast girder supplier. This differentiation belongs in the subcontract between the General Contractor and his subs. UDOT specs always direct the Contractor who is ultimately responsible for all aspects of the work. Therefore, these requested changes were not incorporated.

His other comment was to require that erection be done by a PCI Certified Erector who has five years experience in the erection of concrete girders. This is a new certification. Since UDOT does not currently require PCI Certification in precast concrete girder fabrication, the Structures Section decided not to require this certification at this time.

Clark Olsen, Utah Pacific Bridge & Steel, Steel Fabricator – Contacted by email and phone. His comments relate to the similar specification for Structural Steel. His comments are included here since they are equally applicable to this specification. He also forwarded the spec to Olsen-Beal Erectors and a few contractors. Olsen-Beal was fine with the spec; Clark received no response from the contractors. His comments as follows:

1. Erectors fall into three categories: (1) those who prepare an erection plan with a Professional Engineer, (2) those who prepare an erection plan without a Professional Engineer, and (3) those who do not prepare an erection plan. He felt that this was a good addition to the spec and indicated that it was similar to what Colorado had come up with.
2. He suggested that we might get better buy-in from AGC and industry if we included a requirement to include in the plan the minimum number of girders, cross-frames, connections, etc. necessary for stability because the erector will seldom erect as many girders in a night as he plans and the PE usually is not available in the early hours of the morning when the decision needs to be made whether to open traffic.
3. See comment under F.1 Additional Costs.

Consultants (as required) (Any additional contacts beyond “C” above.)

None.

Others (as appropriate)

Rex Harris, Region 1 Preconstruction Engineer – No Comment
Tim Rose, Region 2 Preconstruction Engineer – No Comment
Brent Schvaneveldt, Region 3 Preconstruction Engineer – No Comment
Clark Mackay, Region 4 Preconstruction Engineer – No Comment

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No impacts.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

.

There may be a bid item cost increase. Probably $3000 on a simple bridge, and $8000 to $10,000 on a complex curved bridge. This equates to roughly $20 / ton on a small bridge and $10 / ton on a large bridge. (See Clark Olsen's comments.) The reason for the increase is requiring the services of a Utah PE.

Note that the Girder Erection Plan is something that the Erector should be doing anyway (and many already are doing it, some without the PE). This change formalizes the process and assures the Department that it is being done.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

None.

3. Life cycle cost.

No significant changes.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

1. Limits the Department's liability.
2. Improves safety of public, inspectors, and construction workers.
3. Ensures proper girder erection.
4. Minimizes the potential for significant traffic impacts resulting from girder collapse during construction.

H. Safety Impacts?

Increases safety to public, construction workers, inspectors, etc.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

UDOT has not required an erection plan except on a case-by-case basis for specialty or complicated bridges. I am only aware of one girder collapse during construction in Utah in recent history. This occurred in about 1980 at Fish Creek or Shingle Creek Bridge on I-70. These bridges cross canyons and therefore there was no risk to the public. They were structural steel girders. In recent years, there has been a greater emphasis on UDOT projects to minimize traffic impacts during construction. This requires that when the girder erection impacts traffic, it be completed during nighttime hours with penalties for not opening to traffic on time in the morning.

This was the case for a project in Denver, Colorado last year. The Contractor could not complete the girder erection as planned completing one girder instead of two. The girder was inadequately braced to an existing girder, which resulted in the girder collapse several days later killing a family. Hopefully, requiring a girder erection plan sealed by a Utah PE, who must also approve any changes to that plan, will minimize the possibility of this ever happening in Utah.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

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Supplemental Specification
2005 Standard Specification Book

SECTION 03412M

PRESTRESSED CONCRETE

Delete Article 1.3 and replace with the following:

1.3 REFERENCES

A. AASHTO M 203: Steel Strand, Uncoated Seven-Wire for Prestressed Concrete

B. AASHTO M 270: Structural Steel for Bridges

C. AASHTO Standard Specifications for Highway Bridges, Division II

D. AASHTO LRFD Bridge Construction Specifications

~~D~~E. ASTM C 150: Portland Cement

~~E~~F. Federal Standards

~~F~~G. UDOT's Quality Management Plan

Add the following to Part 1, Article 1.4:

E. Do not ship prestressed concrete members until tests on concrete cylinders, manufactured of the same concrete and cured under the same conditions as the girders, indicate that the concrete of the particular member has attained a compressive strength equal to the specified design compressive strength of the concrete in the member.

Add the following to Part 1, Article 1.5:

C. Erection Plan: Submit an Erection Plan 10 days prior to beginning erection of prestressed concrete members for documentation purposes only. Fully illustrate the proposed method of erection. Provide complete details of the process including, but not limited to:

1. Temporary supports, bracing, guys, dead-men, lifting devices, connection details, and attachments to bridge members.

2. The schedule and sequence of erection, location of cranes, crane capacities, location of lifting points on the bridge members, member weights and any other assumed loads during progressive stages of construction.
3. Complete details for all anticipated phases and conditions during erection.
4. Minimum number and arrangement of primary members, secondary members, connections, etc. that must be installed, braced, and/or properly connected to provide structural integrity and stability.
5. Incorporate into the plan the requirements from this section, Article 3.7.
6. A professional engineer, licensed in the State of Utah, will approve, sign, and seal the Erection Plan and supporting calculations. The professional engineer must approve all changes to the Erection Plan prior to implementation.

Add the following to Part 3:

3.7 ERECTION

A. Maintain responsibility for all aspects of girder erection during all stages of construction, including the protection of prestressed concrete members, and the safety of all work forces, the inspectors, and the traveling public.

B. Erect all prestressed concrete members in compliance with the Erection Plan. Erect girders in a manner that prevents damage to all elements of the structure.

C. Temporarily support, anchor and brace all erected superstructure members as necessary for stability and to resist wind or other loads until they are permanently secured to the structure. Support, anchor and brace all superstructure members as detailed in the Erection Plan before allowing traffic under the bridge.

D. Design temporary supports and falsework in accordance with the current edition of the AASHTO LRFD Bridge Construction Specifications, Section 3 "Temporary Works."

E. Accurately assemble all parts as specified in the contract documents or erection drawings. Follow any match-marks.

F. Carefully handle materials so that no parts will be cracked, chipped, broken or otherwise damaged.

G. Use lifting devices in a manner that does not cause damaging, bending, or torsional forces.

H. Before the members are erected, clean bearing surfaces and surfaces that will be in permanent contact.

I. Do not open traffic under a partially-erected bridge superstructure, unless allowed in the Erection Plan or approved by the professional engineer who approved, signed, and sealed the Erection Plan.

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Standards Committee Submittal Sheet

Name of preparer: Ray Cook
Title/Position of preparer: Senior Design Engineer
Specification/Drawing/Item Title: Structural Steel
Specification/Drawing Number: 05120M

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

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This specification adds the requirement for the Contractor to submit a Girder Erection Plan prior to beginning girder erection. It addresses Department concerns for public safety and for limiting Department liability during bridge girder erection. It is a result of the collapse of a temporarily supported girder during bridge construction in Denver, Colorado that resulted in the death of a family. It also places responsibility on the contractor to prevent overstressing in steel girders during erection. Most of the added requirements are taken from the AASHTO LRFD Bridge Construction Specifications, so they are industry standard requirements.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No change.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

No comments received.

ACEC Comments: (Use as much space as necessary.)

No comments received.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

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All contacts were by email. Changes have been made to the proposed specification based upon comments received and a similar Colorado DOT specification.

Construction Engineers

Dennis Simpir, Construction, Region 1 – No Comment
Rob Wight, Construction, Region 2 – No Comment
Scott Andrus, Construction Engineer, Region 3 – No Comment
Karl Verhaeren, Construction engineer, Region 4 – Suggested replacing “safety” with “protection” in 03412M 3.7 A. (Comment included here because it also applies.)

Contractors (Any additional contacts beyond “C” above.)

None.

Suppliers

Clark Olsen, Utah Pacific Bridge & Steel, Steel Fabricator – Contacted by email and phone. He also forwarded the spec to Olsen-Beal Erectors and a few contractors. Olsen-Beal was fine with the spec; Clark received no response from the contractors. His comments as follows:

1. Steel erectors fall into three categories: (1) those who prepare an erection plan with a Professional Engineer, (2) those who prepare an erection plan without a Professional Engineer, and (3) those who do not prepare an erection plan. He felt that this was a good addition to the spec and indicated that it was similar to what Colorado had come up with.
2. He suggested relaxing the requirement to calculate stresses at all construction phases, since that is difficult to do. He was concerned about how this requirement would relate to shipping.
3. He suggested that we might get better buy-in from AGC and industry if we included a requirement to include in the plan the minimum number of girders, cross-frames, connections, etc. necessary for stability because the erector will seldom erect as many girders in a night as he plans and the PE usually is not available in the early hours of the morning when the decision needs to be made whether to open traffic.
4. See comment under F.1 Additional Costs.

Consultants (as required) (Any additional contacts beyond "C" above.)

None.

Others (as appropriate)

Rex Harris, Region 1 Preconstruction Engineer – No Comment
Tim Rose, Region 2 Preconstruction Engineer – No Comment
Brent Schvaneveldt, Region 3 Preconstruction Engineer – No Comment
Clark Mackay, Region 4 Preconstruction Engineer – No Comment

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No impacts.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

.

Comment from Clark Olsen: There may be a bid item cost increase. Probably $3000 on a simple bridge, and $8000 to $10,000 on a complex curved bridge. This equates to roughly $20 / ton on a small bridge and $10 / ton on a large bridge. (See Clark Olsen's comments.) The reason for the increase is requiring the services of a Utah PE.

Note that the Girder Erection Plan is something that the Erector should be doing anyway (and many already are doing it, some without the PE). This change formalizes the process and assures the Department that it is being done.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

None.

3. Life cycle cost.

No significant changes.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

1. Limits the Department's liability.
2. Improves safety of public, inspectors, and construction workers.
3. Ensures proper girder erection.
4. Minimizes the potential for significant traffic impacts resulting from girder collapse during construction.

H. Safety Impacts?

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This was the case for a project in Denver, Colorado last year. The Contractor could not complete the girder erection as planned completing one girder instead of two. The girder was inadequately braced to an existing girder, which resulted in the girder collapse several days later killing a family. Hopefully, requiring a girder erection plan sealed by a Utah PE, who must also approve any changes to that plan, will minimize the possibility of this ever happening in Utah.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

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Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

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Supplemental Specification
2005 Standard Specification Book

SECTION 05120M

STRUCTURAL STEEL

1.3 REFERENCES

A. AASHTO M 164: High-Strength Bolts for Structural Steel Joints

B. AASHTO M 270 M: Carbon and High-Strength Low-Alloy Structural Steel Shapes, Plates, and Bars and Quenched-and-Tempered Alloy Structural Steel Plates for Bridges

C. AASHTO M 291: Carbon and Alloy Steel Nuts

D. AASHTO M 293: Hardened Steel Washers

E. AASHTO LRFD Bridge Construction Specifications

~~E~~F. AASHTO Standard Specifications for Highway Bridges

~~F~~G. ASTM A 123: Zinc (Hot-dip Galvanized) Coatings on Iron and Steel Products

~~G~~H. ASTM F 606: Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, and Rivets

~~H~~I. ASTM F 959: Compressible-Washer-Type Direct Tension Indicators for Use With Structural Fasteners

~~I~~J. ANSI/AASHTO/AWS D1.5

~~J~~K. UDOT Steel and Concrete Construction Manual

Add the following to Part 1, Article 1.4:

D. Erection Plan: Submit an Erection Plan 10 days prior to beginning erection of structural steel members for documentation purposes only. The Engineer will not approve the Erection Plan. Fully illustrate the proposed method of erection. Provide complete details of the process including, but not limited to:

1. Temporary supports, bracing, guys, dead-men, lifting devices, connection details and attachments to bridge members.

2. The schedule and sequence of erection, location of cranes, crane capacities, location of lifting points on the bridge members, member weights, and any other assumed loads.
3. Complete details for all anticipated phases and conditions during erection.
4. Minimum number of primary members, secondary members, connections, etc. that must be installed and properly connected to provide structural integrity and stability.
5. Supporting calculations in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications to demonstrate that factored resistances are not exceeded and that member capacities and final geometry will be correct.
6. Incorporate into the plan the requirements from this section Article 3.5.
7. A professional engineer, licensed in the State of Utah, will approve, sign, and seal the Erection Plan and supporting calculations. The professional engineer must approve any and all changes to the Girder Erection Plan prior to implementation.

Add the following to Part 3:

3.5 ERECTION

A. Maintain responsibility for all aspects of girder erection during all stages of construction, including the protection of prestressed concrete members, and the safety of all work forces, the inspectors, and the traveling public.

B. Erect structural steel members in compliance with the Erection Plan and in a manner that prevents damage to all elements of the structure.

C. During erection, temporarily support, anchor and brace primary members such as beams and girders in a manner that will produce the proper alignment and camber in the completed structure. Install cross frames and diagonal bracing as necessary to provide stability and assure correct geometry. Provide temporary bracing or stiffening devices if necessary during any stage of erection. Support, anchor and brace all erected superstructure members as detailed in the Erection Plan before allowing traffic under the bridge.

D. Design temporary supports and falsework in accordance with the current edition of the AASHTO LRFD Bridge Construction Specifications, Section 3 "Temporary Works."

E. Accurately assemble all parts as specified in the contract documents or erection drawings. Follow any match-marks.

F. Provide any additional materials that are required to keep both the temporary and final stresses within the allowable limits used in design.

G. Carefully handle materials so that no parts will be bent, broken, or otherwise damaged. Do not injure or distort the members when hammering.

H. Before the members are assembled, clean bearing surfaces and surfaces that will be in permanent contact.

I. Do not open traffic under a partially-erected bridge superstructure, unless allowed in the Erection Plan or approved by the professional engineer who approved, signed, and sealed the Erection Plan.

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Action Item Update for April 28, 2005 Standards Committee Meeting
(As of June 9, 2005)

Item 1, Rumble Strips: According to John Leonard the BYU study is still pending. No date set. This item was originally opened June 27, 2002. **Recommend closing item and reopen when the item is ready to finalize.**

Item 2, Painted Cattle Guard: According to John Leonard this is on hold pending further study and review within the Research Division. This item was originally opened December 19, 2003. **Recommend closing item and reopen when the item is ready to finalize.**

Item 3, New Drawing of Four-Legged Intersection: John Leonard indicated all related intersection drawings are being reviewed and will be update in the Fall time frame. This item was originally opened August 28, 2003. **Recommend closing item and reopen when the item is ready to finalize.**

Item 4, Traffic Barriers (Median Barrier Selection Process): This item is being covered on the June agenda.

Item 5 QIT to review entire New Products procedure: Information on this item has been finalized with a policy and Web page update. This item is being covered on the June agenda.

Item 6, Open Range Cattle Issues: Robert Hull not available for the June 2005 meeting. Target date moved to August 2005 meeting.

Item 7, Section 00555, Prosecution and Progress, Liquidated Damages Table letter to FHWA indicating the information has been reviewed but that no change is being recommended: According to Pete Negus the letter was still pending as of June 6, 2005.

End of Agenda Package